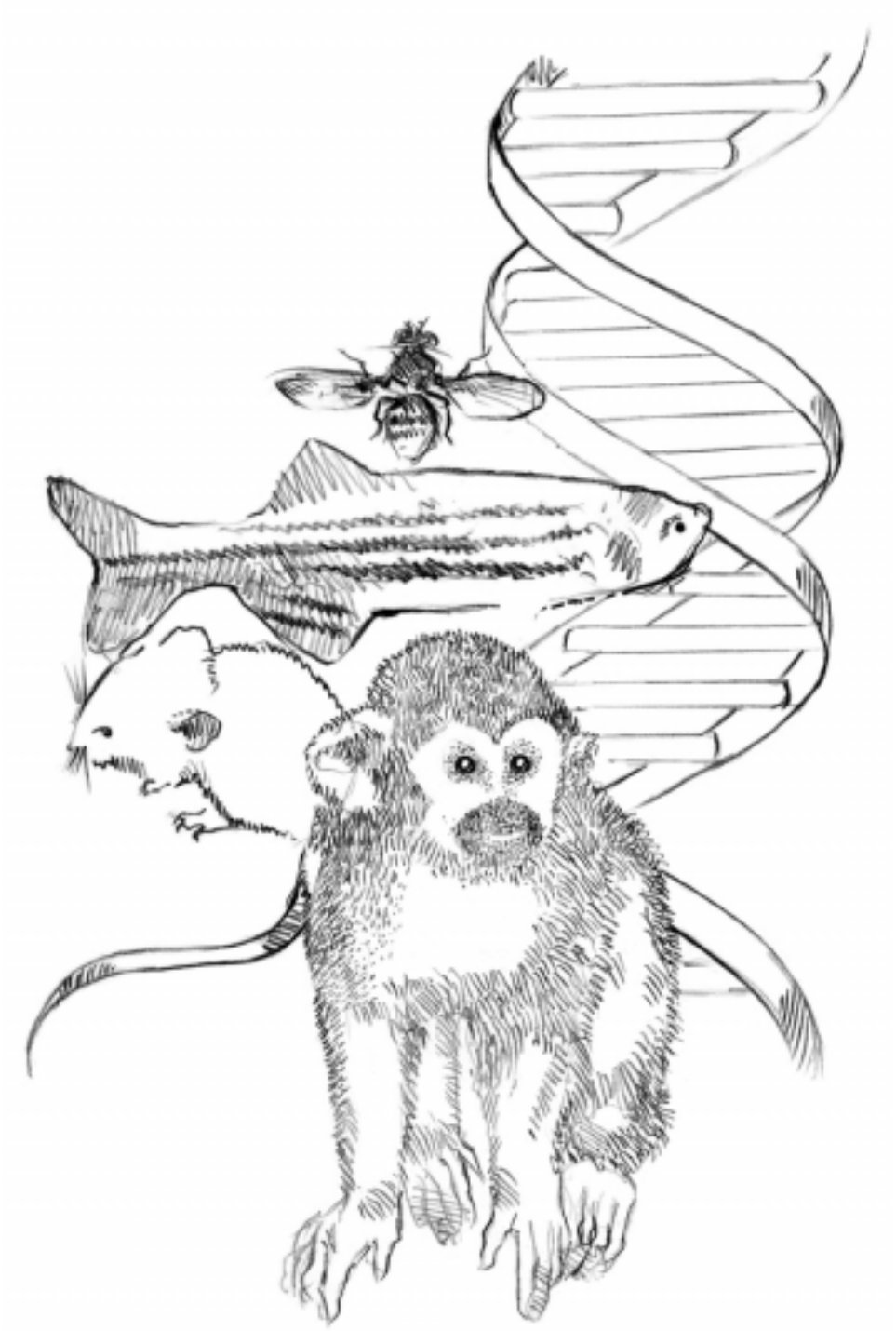
Comparative Medicine Resources



1999

Directory

National Center for Research Resources

National Institutes of Health

National Center for Research Resources

The National Center for Research Resources (NCRR) has a unique mission at the National Institutes of Health (NIH). Through NCRR, biomedical investigators supported by NIH's disease-oriented institutes can access the resources and technologies they need to conduct research that improves human health.

The diverse research centers and resources that NCRR supports throughout the nation include:

- clinical research and career development at leading academic medical centers;
- biomedical technologies and instrumentation;
- mammalian and nonmammalian models for human disease;
- research infrastructure, including science education, facility construction and renovation, and support to increase research competitiveness of minority institutions and states with limited NIH funding.

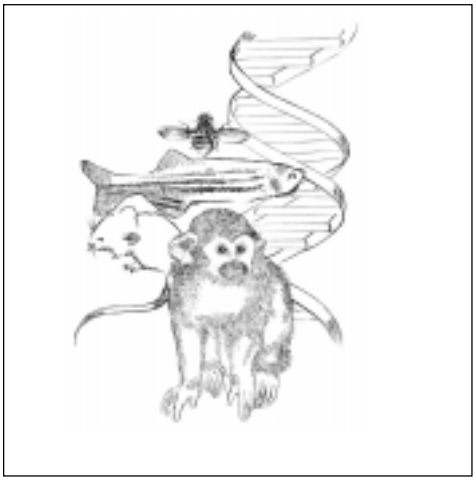
These research centers and resources are cost-effective; investigators numbering in the tens of thousands each year share in their use. Moreover, while conducting research at these NCRR-supported centers and resources, many investigators enter into collaborations with scientists from other disciplines who have complementary skills and projects. These partnerships not only extend research dollars, but also enhance scientific ideas.

NCRR has designed this publication to help scientists take advantage of these cost-saving, idea-generating resources. It is one of a series of research resource directories published by NCRR.

For the most up-to-date listing of NCRR-supported comparative medicine resources, visit the NCRR Web site at http://www.ncrr.nih.gov.

Other NCRR research resource directories include *Clinical Research Resources* and *Biomedical Technology Resources*. For copies of these or other NCRR publications, or for more information about NCRR-supported activities, contact:

Office of Science Policy and Public Liaison
National Center for Research Resources/NIH
6705 Rockledge Drive, Room 5046
Bethesda, MD 20892-7965
301-435-0888; Fax: 301-480-3558
E-mail: ospio@ncrr.nih.gov



Cover:
Comparative Medicine permits biomedical investigators to study human health and diseases in a variety of animal models and nonbiological systems before moving to patient studies in clinical research.

Credit: Al Laong, NIH Medical Arts and Photography Branch.

Comparative Medicine Resources

1999
Directory

National Center for Research Resources

National Institutes of Health

Prepared by:
Research Resources Information Center
under contract N02-RR-6-3552

Introduction

The Comparative Medicine (CM) area of the NIH National Center for Research Resources (NCRR) helps meet the needs of biomedical researchers for high quality, disease-free animals and specialized resources. The CM area—through grants, cooperative agreements, and contracts—supports nonhuman primate and other vertebrate and invertebrate research models and biological materials, postdoctoral training, and a variety of research projects.

The purpose of this publication is to direct scientists to resources that can provide the appropriate research model or material they need for their research. The diversity and number of NCRR CM area resources reflect the biomedical research communities' needs for different models and materials. This directory also informs readers about NCRR CM training initiatives and grant activities.

The biological similarities between human and nonhuman primates make the network of eight NCRR-supported Regional Primate Research Centers (RPRCs) a valuable resource to study human health and disease. Their regional proximity to academic research institutions provides access for a large number of biomedical investigators who require nonhuman primates for their scientific pursuits. In addition to the RPRCs, the NCRR CM area also supports nonhuman primate resources that make baboons, squirrel monkeys, chimpanzees, and specific-pathogen-free macaques available for biomedical research.

To alleviate the expense of housing and maintaining laboratory animals in individual laboratories, NCRR supports research and development of national rodent, zebrafish, and invertebrate model resources. These resources collect, preserve, maintain, track, and distribute important stocks and strains to biomedical researchers. All of these models are valuable tools for genetics research. Critical biological materials, such as cell lines, recombinant DNA material, and microorganisms, are also available to the research community.

In addition to animal and biological materials resources, NCRR also supports genetics typing and analysis resources that develop and characterize animal models for genetically complex human traits and diseases. NCRR-supported information resources, including registries, resource-related reference centers, and newsletters, collect and broadly share news and other information to help improve the quality, use, care, and breeding of laboratory animals.

The NCRR CM area also supports training for postdoctoral students in laboratory animal science, comparative pathology, and comparative medicine at the individual and institutional level through National Research Service Awards. Advanced career development in comparative medicine is supported through Special Emphasis Research Career Awards and the Midcareer Investigator Awards in Mouse Pathobiology Research. The NCRR CM area also participates in the Academic Research Enhancement Award program to stimulate research in educational institutions that provide baccalaureate training for a significant number of research scientists, but have not been major recipients of NIH support.

For more information about NCRR Comparative Medicine activities, please visit our Web site at http://www.ncrr.nih.gov or contact:

John Strandberg, D.V.M., Ph.D.
Director, Comparative Medicine
National Center for Research Resources
One Rockledge Centre
6705 Rockledge Drive MSC 7965
Bethesda, MD 20892-7965
301-435-0744
Fax: 301-480-3819
E-mail: CMADIR@ncrr.nih.gov

Directory Organization

This directory lists key staff members and features of the resources supported by the Comparative Medicine area of the National Center for Research Resources. The entries are organized by type of resource; within each type, entries are listed alphabetically by name. Institutional training awards and short-term training awards are listed alphabetically by state. Descriptions of comparative medicine grant activities follow next in this directory.

Name, geographic, and key word indexes are included at the end of the directory.

Contents

Invertebrate Resources

Biological Materials Resources

Information Resources

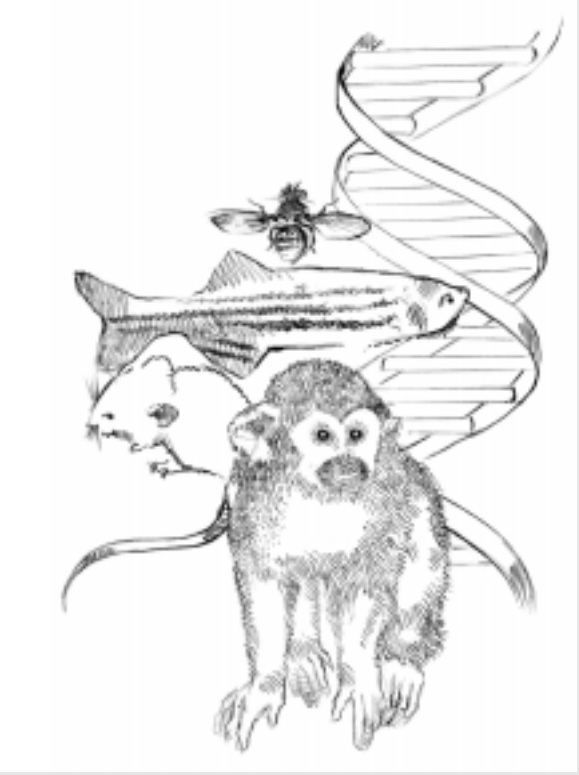
Institutional and Short-Term Training Awards (alphabetical by state)

Short-Term Training Awards: Students in Health Professional Schools

Comparative Medicine Activities

Indexes

Primate Resources



The Regional Primate Research Center (RPRC) facilities and resources are shared by RPRC staff scientists and investigators from other institutions across the country. The centers' specialized resources are intended to assist investigators who receive their primary research funding from NIH, but the centers may also host investigators who are funded by other federal, state, and local agencies, as well as by research foundations and the private sector. There are more than 19,000 animals representing more than 30 different species of nonhuman primates, mostly macaques, at these RPRCs.

Each RPRC has a Visiting Scientist Program that offers advanced training and research in nonhuman primate biology. Collaborative arrangements between investigators and center scientific staff are encouraged and can be developed on studies related to major human diseases, subject to the availability of resources and center staff time. Nonhuman primate blood samples, organs, and biological fluids are available through the RPRCs. The following standardized criteria and procedures have been implemented at each RPRC to facilitate utilization of center resources:

Access Criteria

- The nature and scope of the proposed research must be best conducted with nonhuman primates and be compatible with available center resources.

- The proposed research must have high scientific merit as determined by peer review.

- NIH-funded research takes precedence over research activities funded by other sources.

- Grants must contain appropriate budgets for the RPRC portion, including animal per diem costs, RPRC service charges, and related items. Sharing of animals during experimentation and returning the animals to the colony for future experimental use are contributing factors to the overall costs.

- Availability of RPRC resources, including animals, space, research services and support, and special requirements, such as biosafety facilities, are also limiting factors that must be considered by the investigator.

- Because of potential contamination (e.g., viral, microbial), movement of animals into or out of the RPRC facilities is not allowed. Thus, the proposed research using live animals must use RPRC animals, and the research must be conducted at the RPRC.

Access Procedures

- An initial research proposal must be submitted by the researcher to the RPRC prior to submitting an application for funding. The director then consults with the research services, veterinary, and colony management staff members at the center to assess resource availability and project feasibility. (Note that special requests or conditions regarding animals of certain age, gender, weight, or other stipulations affect the RPRC's capability to meet the researcher's needs.)

- When resource availability and project feasibility have been established, the center staff will provide budget information to the researcher regarding the center costs to be included in the formal research proposal.

- The scientific merit of the proposal must then be evaluated through the NIH peer review process or through a similar process at other agencies. However, small pilot projects with other funding sources may be considered. In the latter case, the peer review is conducted by the RPRC Research Advisory Committee.

- In addition to the scientific peer review, a protocol approved by the institutional animal care and use committees (IACUC) at both the investigator's institution and the RPRC must be in place. Protocols must also be established to address biosafety concerns. (Note that these issues can be addressed simultaneously with the scientific evaluation but are frequently raised during the peer review process.)

- When the investigator has received notification of funding, the center director should be advised immediately so that the resources at the center may be reserved for the funded proposal.

- Biological materials such as blood samples, organ tissues, and biological fluids can be obtained by contacting the directors and staff of the centers.

All publications resulting from research conducted at or with center resources must bear an appropriate acknowledgment of center support.

Inquiries

For additional information about the Visiting Scientist Program and resources available at a specific center, including applying to utilize a center's resources, contact the center director or appropriate contact person listed in this directory.

California Regional Primate Research Center

Center Director and Contact
Andrew G. Hendrickx, Ph.D.
530-752-0420 Fax: 530-752-8201
E-mail: aghendrickx@primate.ucdavis.edu

Additional Contact
Jenny Short
530-752-7169

Principal Investigator
Bennie I. Osburn, D.V.M., Ph.D.

University of California, Davis
Davis, CA 95616

URL: http://www.crprc.ucdavis.edu/crprc/homepage.html

The center is located on a 300-acre tract 3 miles from the main campus of the University of California, Davis. The university administers the center and provides its academic setting.

Research Emphasis / Objectives

Studies of the effects of environmental influences on human health and basic biological approaches to better understand a variety of human and animal diseases.

Current Research

Studies describing the sources of social order in various species of primates and analyzing the underlying regulatory processes and their contributions to animal well-being and reproductive success. The studies also encompass clinically relevant conditions involving the brain and behavior, such as the aging process and AIDS.

Normal and abnormal aspects of prenatal development, with particular emphasis on embryotoxic effects of certain agents that are likely to result in embryonic abnormalities during human pregnancy. Other projects concern sperm function and transport in the uterus and oviduct, gamete interaction, early embryogenesis in an in vitro fertilization system, mechanisms of zinc deficiency in abnormal development, and cellular biology of the placenta and fetal membranes.

Effects of air pollutants and disease on the respiratory system; lung growth and aging; pulmonary immunopathology.

Virology and Immunology

Special emphasis is placed on retroviruses and immunodeficiency diseases. Studies are designed to better understand, treat, and prevent AIDS, and to produce retrovirus-free nonhuman primates.

Resources Provided

Primate Medicine

Maintenance of colony health; programs in preventive medicine; research services such as surgery, radiology, medicine, and consultation; domestic breeding; spontaneous diseases research.

Primate Pathology

Monitoring and defining health problems; spontaneous diseases research.

To Outside Investigators

Specimens

Organs and tissues are provided when available; other biological samples are provided on special request. Shipping, collecting, and processing costs are charged to the requestor.

To Collaborating Scientists

Scientists wishing to conduct research at the center must have their projects reviewed and approved by the center director, scientific advisory committee, and campus animal care review committee. The center's services are available to collaborating scientists on a fee-for-service basis. Services include:

Primate Medicine

Preventive medicine and epidemiologic evaluation, surgery, radiology, therapeutics, specialized medical procedures.

Diagnostic Pathology and Clinical Laboratory Services

Bacteriology, biochemistry, hematology, immunology, parasitology, pathology, virology.

Electron Microscopy

Transmission electron microscopy.

Inhalation Toxicology

Inhalation chambers are available.

Data Services

Colony database system.

Animals

Center breeding colony: cynomolgus macaque *(Macaca fascicularis)*, rhesus macaque *(M. mulatta)*.

Center research colony: *M. mulatta*, *M. fascicularis*.

Index Terms

AIDS, Alzheimer's disease, birth defects, electron microscopy, immunology, inhalation toxicology, neurobiology, primate behavior, prenatal development, primates, virology.

New England Regional Primate Research Center

Center Director and Contact
Ronald Desrosiers, Ph.D.
508-624-8042 Fax: 508-624-8190
E-mail: ronald_desrosiers@hms.harvard.edu

Additional Contact
James T. Wortham, M.P.A.
508-624-8003
E-mail: james_wortham@hms.harvard.edu

Principal Investigator
Joseph B. Martin, M.D., Ph.D.
Dean, Harvard Medical School

One Pine Hill Drive
P. O. Box 9102
Southborough, MA 01772-9102

URL: http://www.hms.harvard.edu/nerprc/

The center is located on 135 acres in Southborough, Massachusetts, about 30 miles from Boston. Harvard University administers the center and provides its academic setting.

Research Emphasis / Objectives

Infectious diseases (particularly simian lentivirus-induced diseases), immunology, oncogenic herpesviruses, primate pathology, behavioral biology, neurodegenerative diseases, neurochemistry, brain imaging, and neuropharmacology.

Current Research

Use of simian immunodeficiency virus (SIV) as a model for AIDS in rhesus monkeys, host and viral determinants of AIDS pathogenesis, strategies for vaccine development, immune-based therapeutic strategies, pathogenesis of opportunistic infections.

Elucidation of spontaneous diseases of nonhuman primates and development of new models for comparable human diseases.

Neurobiology and behavioral pharmacology of cocaine abuse with emphasis on mechanisms of action, behavioral effects, and treatment. Use of 1-methyl-4-phenyl-1,2,5,6-tetrahydropyridine (MPTP) model for Parkinson's disease, to develop imaging agents for chronic neurologic disorders, to monitor disease progression and effectiveness of therapeutic strategies. Drug discovery and development for central nervous system disorders.

Resources Provided

To Outside Investigators

Specimens

Tissue specimens, organs, blood, skeletal structures, viral specimens, etc. Animals for approved research projects are provided from breeding colonies or other sources as required. Costs are normally assumed by the individual requesting the specimens.

To Collaborating Scientists

Scientists wishing to conduct research at the center must have projects reviewed and approved by the center director, executive committee, and institutional animal care and use committee. A brochure explaining the collaborative research program is available from the center. Some services are provided without charge, some on a fee basis. They include veterinary services, animals and animal care, surgical and radiographic services, timed mating, biocontainment, pathology services, and professional and technical expertise.

Animals

Colonies of rhesus macaque *(Macaca mulatta)*, cynomolgus macaque *(M. fascicularis)*, common marmoset *(Callithrix jacchus)*, and squirrel monkey *(Saimiri sciureus)*. Other species can be obtained as required. Animals with exceptional characteristics (specific-pathogen-free, timed pregnancy, surgically altered, etc.) can be made available if needed.

Index Terms

AIDS, cardiovascular physiology, cocaine abuse, cognitive deficits, imaging agents, myocardial diseases, neurodegenerative diseases, neuropsychiatric drugs, Parkinson's disease, viral diseases.

Oregon Regional Primate Research Center

Center Director and Contact
M. Susan Smith, Ph.D.
503-645-1141 Fax: 503-690-5569
E-mail: smithsu@ohsu.edu

Additional Contact
P. Michael Conn, Ph.D.
503-690-5297 Fax: 503-690-5569
E-mail: connm@ohsu.edu

Principal Investigator
Peter O. Kohler, M.D.

505 N.W. 185th Avenue
Beaverton, OR 97006

URL: http://www.ohsu.edu/orprc

The center is located on a 247-acre campus 12 miles from downtown Portland. Oregon Health Sciences University administers the center and provides its academic setting.

Research Emphasis / Objectives

Reproductive sciences, neuroscience, pathobiology, and immunology.

Current Research

Control of folliculogenesis and the corpus luteum, factors that control sperm motility and maturation, neuroendocrinology, hormonal control of parturition, steroid receptors in primate reproductive tract and brain tissues, implantation, in vitro fertilization, hormonal control of peptide and catecholamine gene expressions.

Neurological processes in regeneration of neural tissue, interactions between neural and immune systems, factors controlling differentiation and growth of neurons and glia, degenerative diseases, developmental neurobiology.

Pathobiology and immunology, therapeutic modification of atherosclerosis, human and animal models related to retrovirus infections.

Resources Provided

To Outside Investigators

Tissue specimens, organs, etc., when available. Costs are normally assumed by the requestor.

To Collaborating Scientists

Scientists wishing to conduct research must have their projects approved by the institutional animal care and use committee and the research advisory subcommittee. Some services are provided without charge, some on a fee basis. They include:

Medical Services

Physiological data and surgical specimens, cardiology, recovery of animals for future projects.

Colony Operations

Primates, guinea pigs, mice, hamsters, rats, rabbits.

Pathology

Necropsies, tissue distribution, consultation.

Microscopy and Image Analysis Services

Confocal and electron microscopy.

Data Processing

Comprehensive animal information system, consultation and support on statistical processing, extensive radioimmunoassay support.

Library

8,300 books, 15,250 bound journals, 200 journal subscriptions, MEDLARS searching services, PriMed database, Internet.

Endocrine Services Laboratory

Steroid and pituitary protein hormone radioimmunoassays.

Medical Illustrations and Photography

Animals

Japanese macaque *(Macaca fuscata),* rhesus macaque *(M. mulatta),* pigtailed macaque *(M. nemestrina);* white-fronted capuchin *(Cebus albifrons),* tufted capuchin *(C. apella).* Includes an outdoor troop of about 190 *M. fuscata* and a colony of 2,100 *M. mulatta.*

Molecular Biology Core

DNA synthesis and sequencing, cDNA probes.

Cell Culture Core

Maintenance of cell lines, media preparation.

Morphology Core

Tissue embedding and sectioning, immunohistochemistry, in situ hybridization.

Index Terms

AIDS, confocal microscopy services, molecular biology, neuroscience, nonhuman primate resources, reproductive biology.

Southwest Regional Primate Research Center

Center Director and Contact
John L. VandeBerg, Ph.D.
210-258-9430 Fax: 210-670-3309
E-mail: jlv@icarus.sfbr.org

Additional Contact
Thomas M. Butler, D.V.M.
210-258-9465 Fax: 210-670-3305
E-mail: tbutler@icarus.sfbr.org

Principal Investigator
Frank F. Ledford Jr., M.D.

Southwest Foundation for Biomedical Research
Post Office Box 760549
San Antonio, TX 78245-0549

URL: http://www.srprc.org

The center is located on the 397-acre campus of the Southwest Foundation for Biomedical Research, approximately 12 miles from downtown San Antonio and 7 miles from the University of Texas Health Science Center at San Antonio. The Southwest Foundation administers the center.

Research Emphasis / Objectives

Nonhuman primate models of human diseases, including common chronic diseases and infectious diseases; genetic and environmental effects on physiological processes and susceptibility to specific diseases.

Current Research

Genetics

Genetic and environmental bases for susceptibility to atherosclerosis, hypertension, osteoporosis, obesity, and infectious diseases; construction of a baboon gene map; genomic screening for disease-related genes; genetic management strategies for research colonies; development of new genetic analytic strategies and software.

Infectious Diseases

AIDS; hepatitis B, C, and E; herpes B; emerging viral diseases; fundamental research and vaccine and drug testing.

Neonatal Diseases

Hyaline membrane disease, bronchopulmonary dysplasia, and cardiac abnormalities in premature babies.

Physiology

Control of ingestive behavior, dietary effects on blood pressure, brain imaging, lipid metabolism.

Pathobiology

Spontaneous diseases and experimental models of diseases.

Behavior

Impact of enrichment strategies on behavior and well-being, genetic and endocrine effects on maternal behavior.

Resources Provided

To Outside Investigators

The SRPRC encourages the use of its resources by investigators from the national and international biomedical research communities as well as collaborative research initiatives involving center staff and outside investigators. In general, expenses are assumed by the initiating investigator and collaborative research efforts are covered by grants acquired collaboratively.

Specimens

Banked serum, tissue, and DNA samples; fresh blood, serum, plasma, tissue, and organs.

Animals

Baboon (*Papio*) species, chimpanzees (*Pan troglodytes*), rhesus macaque (*Macaca mulatta*), miscellaneous primate species, as required for specific research purposes.

Veterinary Technical Services

Timed pregnancies, tether, radiography, sonography, endoscopy, experimental surgery, experimental diets, nursery, behavioral assessment.

Pathology

Necropsies, clinical chemistry, hematology, histology, bacteriology, virology, parasitology.

Data Services

Colony database system, genetic analysis software, genetic typing services.

Index Terms

AIDS, common diseases, genetic analysis, genetics, infectious diseases, neonatal diseases, primate behavior, primate models, vaccines, virology.

Tulane Regional Primate Research Center

Center Director and Contact
Peter J. Gerone, Sc.D.
504-892-2040 x 6272 Fax: 504-893-1352
E-mail: gerone@tpc.tulane.edu

Additional Contact
Gary B. Baskin, D.V.M.
E-mail: gbask@tpc.tulane.edu

Principal Investigator
John C. LaRosa, M.D.

18703 Three Rivers Road
Covington, LA 70433

URL: http://rhesus.tpc.tulane.edu

The center is located on 500 acres near Covington, Louisiana, 35 miles from the main Tulane University campus in New Orleans. Tulane University administers the center and provides its academic setting.

Research Emphasis / Objectives

Infectious diseases, gene therapy, and physiology.

Current Research

Microbiology

Testing of antiviral compounds; experimental infections using *Mycobacterium leprae*, herpesviruses, microsporidia, retroviruses, and simian viruses; molecular virology and basic immunology of infectious diseases and cancer. A particular focus is on AIDS research.

Parasitology

Biology of filarial and malarial infections, Lyme borreleosis in rhesus monkeys, parasitic diseases of nonhuman primates.

Resources Provided

To Outside Investigators

Electron microscopy, cell sorting, laparoscopy, ultrasound.

Specimens

Tissue specimens, organs, etc., are provided when available. Costs are normally assumed by the requestor.

To Collaborating Scientists

Scientists who want to conduct research at the center must have their projects reviewed and approved by the center director, scientific advisory committee, and the institutional animal care and use committee if experimental animals are involved.

The center's services are provided to collaborating scientists on varying bases. Some are provided without charge, some on a fee basis. They include:

Animal Care

General veterinary care of experimental animals, technical assistance for procedures involving animals, husbandry and breeding of nonhuman primates, nursery, surgery, and x-ray services.

Pathology

Necropsies, histopathology, clinical pathology, bacteriology, hematology, clinical chemistry, and electron microscopy.

Parasitology Services

Science Information Service

Includes MEDLINE, AIDSLINE, CATLINE, and CANCERLINE.

Medical Illustration

Animals

Rhesus monkey *(Macaca mulatta)*, cynomolgus macaque *(M. fascicularis)*, pigtailed macaque *(M. nemestrina)*, patas monkey *(Erythrocebus patas)*, squirrel monkey *(Saimiri sciureus)*, African green monkey *(Cercopithecus aethiops)*, spectacled mangabey *(Cercocebus atys)*, owl monkey *(Aotus trivirgatus)*, Peruvian red-necked owl monkey *(A. nancymai)*, baboon *(Papio)* species.

Index Terms

AIDS, cancer, immunology, infectious diseases, parasitology, primates, urology.

Washington Regional Primate Research Center

Center Director and Contact
William R. Morton, V.M.D.
206-543-1430 Fax: 206-685-0305
E-mail: pattir@bart.rprc.washington.edu

Tissue Distribution
206-543-6999
E-mail: judyj@bart.rprc.washington.edu

Principal Investigator
Paul B. Robertson, D.D.S.

University of Washington
I-421 Health Sciences
Box 357330
Seattle, WA 98195-7330

URL: http://www.rprc.washington.edu/

The center is located in the Warren G. Magnuson Health Sciences Center of the University of Washington and at the Western Facility Annex in Seattle.

Research Emphasis / Objectives

The WaRPRC is committed to facilitation of nonhuman primate-related research through collaborative efforts of core and affiliate scientists. Current biomedical research projects emphasize neurological sciences, animal models, AIDS, virology, immunogenetics, cardiovascular function, developmental biology, and endocrinology and metabolism.

Current Research

Core Staff

Primate neuroscience, neural control of limb movement, vestibular and oculomotor interactions, neural mechanisms of vision, molecular structure of neuronal membranes, animal model development, virology, viral pathogenesis, vaccine development, therapeutic evaluation, genetic regulation of B-cell function, primate major histocompatibility complex, viral translation, intracellular signaling.

Affiliated Staff

Neurological Sciences

Structure and development of monkey visual cortex, auditory physiology, retinal development, basal ganglia function.

Animal Models

AIDS model systems, Babesia epidemiology, enteric pathogens, antiviral drugs, reproductive health, venereal disease, chlamydia, chancroid, fetal alcohol syndrome, parkinsonism, experimental allergic encephalomyelitis.

Cardiovascular Disease and Function

Arterial smooth muscle cells in atherosclerosis, evaluating blood compatibility of biomaterials, fetal hemoglobin synthesis.

Developmental Biology

Hyaline membrane disease, respiratory distress syndrome, visual development, primate vocalization, effect of epileptic drugs on development.

Endocrinology and Metabolism Research

Reproductive physiology, regulation of glucagon, role of somatostatin in physiology and control of somatostatin secretion, methanol effects, methylmercury effects, parenteral nutrition, bone loss and gain, diabetes endocrine research.

Transplantation and Prosthesis Development

Bone marrow transplantation, lung transplantation, neurotransplantation, cochlear prosthetics, arterial graft development, stem cell transplantation, pancreatic transplantation.

Resources Provided

Affiliate Scientists / Outside Investigators

The WaRPRC is committed to providing complete access to center resources for the research community to facilitate all aspects of nonhuman primate-related research. The WaRPRC provides substantial assistance for collaborative research projects based at the center, including scientific and technical assistance with protocol development, grant submission, data collection and interpretation and manuscript preparation. A computer database of more than 80,000 bibliographic records (1985 to present) of scientific

literature on nonhuman primates is available for lease on PC-compatible computer systems. This database includes full citation and indexing information.

Primate Information Center

Develops indexes of comprehensive, worldwide bibliographic information regarding biomedical research on nonhuman primates. Provides published and custom bibliographies.

Primate Supply Information Clearinghouse

Provides communication links—by telephone and through semimonthly publication of the *New Listings Bulletin*—between U.S. scientists in need of primates or tissues and institutions that can meet their needs. A registry of primate colonies and special services is being developed.

Tissue Distribution Program

The TDP provides samples of blood and all major tissues, either fresh, fixed, or frozen for shipment to investigators throughout the United States.

Pathology

The Combined Pathology Unit provides complete pathology services including gross necropsy, biopsy, histologic evaluation, special diagnostic staining and immunohistochemical and in situ hybridization studies.

Scientific Illustration and Editing

Neurohistology

Immunologic Typing

Primate Colony Division

Primate health care, surgical procedures, x-ray facilities, clinical laboratory, round-the-clock nursery care, computerized genealogic and clinical records.

Biostructure Technology Laboratory

Bioengineering

Instrumentation development, computer programming.

Animals

Cynomolgus macaque *(Macaca fascicularis)*, rhesus monkey *(M. mulatta)*, pigtailed macaque *(M. nemestrina)*, yellow baboon *(Papio cynocephalus)*.

Collections

Slides of lung development in fetal, known-age *M. nemestrina*; 2,000 dental casts on 200 *M. nemestrina*; developmental data on 400 macaque infants, including anthropometric measurements, heart rate, respiration, body temperature, diurnal activity, fluid intake, and weight gain; developmental data on social behavior of 500 macaque infants 1 to 7 months old; videotapes of labor and delivery of 100 *M. nemestrina*; learning assessment data on 100 *M. nemestrina* infants; computerized historical data on 6,500 animals, including 70,000 weight records, 22,000 breeding records, 21,000 hematologic records, and 13,500 disease and necropsy records.

Index Terms

AIDS, animal models, auditory physiology, cardiovascular function, fetal alcohol syndrome, neurology, prosthesis development, psychology, transplantation, vision.

Wisconsin Regional Primate Research Center

Center Director and Contact
Joseph W. Kemnitz, Ph.D.
608-263-3500 Fax: 608-263-4031

Additional Contact
Larry Jacobsen
608-263-3512
E-mail: jacobsen@primate.wisc.edu;
refdesk@primate.wisc.edu; or write the WRPRC Library

Principal Investigator
Virginia S. Hinshaw, Ph.D.

1220 Capitol Court
Madison, WI 53715-1299

URL: http://www.primate.wisc.edu

The center has 56,153 square feet of laboratory, animal, office, and related support space within the three main buildings on the University of Wisconsin-Madison campus. An addition of approximately 49,317 square feet is being built, which consists of animal housing, surgical suites, necropsy and clinical pathology services, along with other related support space. The university administers the center and provides its academic setting.

Research Emphasis / Objectives

Fundamental research in primate biology related to human and animal health. There are seven research groups, with more than 200 core and affiliate doctoral-level staff.

Current Research

Reproduction and Development

Fertility regulation, embryonic differentiation, reproductive health.

Neurobiology

Developmental neurobiology, neuroendocrinology, sensory function.

Physiological Ethology

Reproductive neuroendocrinology, sexual differentiation, ovarian dysfunction, conservation biology.

Psychobiology

Immunobiology, behavioral development, environmental influences.

Aging and Metabolic Disease

Effects of caloric restriction on aging, obesity, diabetes mellitus, endometriosis, menopause, pathobiology of aging.

Immunogenetics

Simian immunodeficiency virus, MHC-defined animals, cytotoxic T cells, molecular MHC analysis.

Immunology and Virology

Viral transmission, pathogenesis, and persistence.

Resources Provided

To Outside Investigators

Tissue specimens, organs, and other biological materials. Costs are normally assumed by the requestor.

Library

Computerized database searches; document delivery; 6,000 books; 10,000 volumes of journals; 300 active journal subscriptions; and 7,000 slides, 800 videotapes, and other audiovisual materials. This is a major international resource.

PRIMATE INFO NET (PIN): An information resource providing access to documents and links to WWW sites about research, conservation, and education in the field of primatology. URL: http://www.primate.wisc.edu/pin/. Telnet: wiscinfo.wisc.edu and look for link to Primate Info Net via Primate Center Library.

ASKPRIMATE: A cooperative Internet reference service available to the public. To ask a question or for referral, send e-mail to: askprimate@primate.wisc.edu.

PRIMATE-JOBS: A job listing service on the World Wide Web. Includes paid and volunteer positions wanted and available. Connect to PRIMATE-JOBS at: http://www.primate.wisc.edu/pin/jobs.

WORLD DIRECTORY OF PRIMATOLOGISTS (WDP): A convenient contact list for people in primatology, at http://www.primate.wisc.edu/pin/wdp.html.

CAREERS IN PRIMATOLOGY: A resource for people considering careers in primate research, education, conservation, or veterinary medicine, at http://www.primate.wisc.edu/pin/careers/careers.html.

PRIMATE-SCIENCE: A professionally oriented electronic discussion forum for people engaged in research with nonhuman primates. Applications for subscription are at http://www.primate.wisc.edu/pin/ps/pscientry.html.

Audiovisual Services

An archival collection of primate-related videotapes, slides, and audiotapes may be borrowed for research or education. A catalog is at: http://www.primate.wisc.edu/pin/av.html. For more information, contact Ray Hamel, Special Collections Librarian, via e-mail at: hamel@primate.wisc.edu.

International Directory of Primatology

A 400-page directory of the field of primatology includes detailed information about organizations, people, species held, educational programs, primates in zoos, information resources. Ordering information may be obtained from Larry Jacobsen via e-mail at: jacobsen@primate.wisc.edu.

To Collaborating Scientists

The center actively encourages researchers from the Midwest region and elsewhere nationally and internationally to use its facilities and services and to conduct collaborative studies. Scientists wishing to conduct research must have their projects reviewed and approved by the center director and advisory committees and have independent funding to cover costs. Some of the center's services are available without charge, some on a fee (charge back) basis. They include:

Research Services

Clinical laboratory tests; assay procedures for adrenal, gonadal, and pituitary hormones; surgery; breeding colony; reproduction technologies; and molecular procedures, including polymerase chain reaction assays and in situ hybridization.

Pathology Services

Diagnose clinical disease through necropsy and surgical pathology services; assist investigators to evaluate tissue changes in experimental disease; identify, describe, and publish new diseases or new aspects of diseases to improve the health of nonhuman primate populations and to establish new models of human disease; maintain a SNOMED database of necropsy diagnoses to aid in epidemiological studies of primate disease; provide routine histology services to investigators, perform in situ hybridizations on tissue culture cells, whole mount embryos, and tissue sections for investigators; perform digital image acquisition and analysis for investigators.

Colony Management

Maintenance, veterinary medicine, assistance in drug administration, specimen collection, animal handling, and environmental enrichment.

Computer Services

Colony record system and research data processing.

Animals

Rhesus macaque *(Macaca mulatta;* about 1,000); common marmoset *(Callithrix jacchus;* 275). The center maintains a breeding colony that produces more than 130 rhesus infants a year and is self-sufficient in its breeding programs.

Index Terms

Aging, AIDS, behavior, development, embryology, endocrinology, genetics, immunology, neurobiology, nutrition, virology, women's health.

Yerkes Regional Primate Research Center

Center Director and Contact
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Additional Contact
Thomas P. Gordon
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Principal Investigator
Michael M. E. Johns, M.D.

Emory University
Atlanta, GA 30322

URL: http://www.cc.emory.edu/WHSC/YERKES/

Center facilities include the Main Station on 25 acres of the Emory University campus in Atlanta and the 117-acre Field Station for behavioral biology research in nearby Lawrenceville.

Research Emphasis / Objectives

Biomedical and biobehavioral research to improve the health and well-being of human and nonhuman primates.

Current Research

Microbiology and Immunology

Primate models for research on AIDS pathogenesis, treatment, and vaccines.

Molecular Medicine

Molecular approaches to cardiovascular and reproductive disorders.

Neuroscience

Molecular, cellular, and behavioral studies of drugs of abuse, especially cocaine.

Psychobiology

Endocrine and behavioral studies of primates living in complex social groups.

Visual Science

Developmental studies of visual function.

Resources Provided

To Outside Investigators

Research proposals by investigators from other institutions are encouraged. Proposals should be submitted for review by the research advisory committee to ensure that resources are available. All proposals are reviewed by the institutional animal care and use committee. Services available to outside investigators at approved rates include veterinary medicine, pathology, and biomedical engineering.

Animals

Rhesus macaque *(Macaca mulatta)*, pigtailed macaque *(M. nemestrina)*, cynomolgus macaque *(M. fascicularis)*, spectacled mangabey *(Cercocebus atys)*, baboon *(Papio)* species, squirrel monkey *(Saimiri sciureus)*, chimpanzees *(Pan troglodytes)*.

Index Terms

AIDS vaccine, chimpanzee, cocaine medication, interventional cardiology, social behavior, visual development.

Baboon Research Resources

Department of Microbiology and Immunology and Division of Animal Resources
University of Oklahoma Health Sciences Center
940 S. L. Young Boulevard
Oklahoma City, OK 73104

URL: http://moon.ouhsc.edu/rkennedy

Principal Investigator and Contact
Ronald C. Kennedy, Ph.D.
405-271-5630 Fax: 405-271-6339
E-mail: ronald-kennedy@ouhsc.edu

Additional Contact
Gary L. White, D.V.M.
405-271-5185 Fax: 405-271-2660
E-mail: gary-white@ouhsc.edu

Research Emphasis / Objectives

To carry out multidisciplinary studies on captive baboons and to provide a resource of laboratory-born and laboratory-reared animals for NIH-sponsored research programs.

Current Research

This baboon resource program will strengthen and expand nonhuman primate biomedical and behavioral research at the University of Oklahoma Health Sciences Center (OUHSC), stimulate increased cooperation among regional research institutions, and establish the OUHSC as a nationally recognized provider of baboons as research subjects. Current research activities involve the characterization of the endogenous microorganisms of the conventional research baboon, improved methods for production of baboons in a captive environment, methods to improve the environment and its effects on production and behavior, genetic diversity among the baboon breeding population, and data collection for the future development of a specific-pathogen-free baboon breeding colony.

Resources Provided

To Outside Investigators

Tissues and body fluids are sometimes available. Such specimens are provided on a priority basis to NIH-sponsored research studies. Costs of packaging and shipping are negotiated on an individual basis to be determined by the nature of the request.

To Collaborating Scientists

Individuals interested in collaborative studies must provide a protocol to the principal investigator. Approval of collaborative projects depends on the relevance of the proposed project to the objectives of the ongoing research effort. Complete animal husbandry, medical care, and pathology services are available to investigators who have approval from the principal investigator to use resource colony animals.

Animals

Some adults and offspring will be available.

Index Terms

Baboon, behavior, breeding resource, immunology, *Papio* species, virology.

Caribbean Primate Research Center Program

Principal Investigator and Contact
Matthew J. Kessler, D.V.M.
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Fax: 787-795-6700
E-mail: mkessler@coqui.net

University of Puerto Rico
Medical Sciences Campus
P. O. Box 1053
Sabana Seca, PR 00952-1053

URL: http://home.coqui.net/caribbeanprc

Research Emphasis / Objectives

Cayo Santiago

Short- and long-term studies of social and sexual behavior, population genetics, demography, reproductive biology, psychopharmacology, functional morphological and spontaneous diseases (arthritis, osteoporosis, adult-onset macular degeneration, glaucoma, diabetes, obesity, hypertension), and parasitoses of rhesus monkeys maintained under seminatural conditions. Colony size: 900.

Sabana Seca

CPRC headquarters and biomedical research on spontaneous diseases (see above), reproductive biology and embryology, social behavior, endocrinology, medical genetics, and husbandry of Cayo Santiago-derived rhesus macaques maintained under a variety of housing configurations (individual cages, pens, enclosures, and 1- to 2-acre corrals). Colony size: 800.

CPRC Museum

Anthropological and biomedical osteological research on 2,500 complete skeletons from 10 species of nonhuman primates, including more than 1,000 from Cayo Santiago rhesus monkeys of known identity, age, sex, matriline, and parity, and 175 skeletons from patas monkeys.

Sierra Bermeja Field Study Site

Research on the ecology, behavior, and biology of introduced population of unprovisioned, free-ranging patas (*Erythrocebus patas*) in southwestern Puerto Rico. Colony size: 150.

Resources Provided

To Collaborating Scientists

CPRC welcomes collaborative research with established behavioral and biomedical investigators and encourages the use of its animal and osteological resources for dissertation research. Investigators are charged modest use fees for access to the animals, skeletal collection, computerized database, and office space, and for housing units located near Cayo Santiago and at Sabana Seca. All proposals must receive rigorous peer review and are judged on scientific merit, feasibility, and potential overlap with ongoing studies. Protocols using live monkeys must be approved by the institutional animal care and use committee (IACUC) of the home institution, as well as the University of Puerto Rico Medical Sciences Campus IACUC.

Index Terms

Aging, behavior, Caribbean, Cayo Santiago, diseases, embryology, osteology, patas, primatology, Puerto Rico, rhesus.

Squirrel Monkey Breeding and Research Resource

Principal Investigator and Contact
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334-460-6239 Fax: 334-460-7783
E-mail: cabee@jaguar1.usouthal.edu

Primate Research Laboratory
College of Medicine
University of South Alabama
Mobile, AL 36688

URL: http: / / southmed.usouthal.edu / com / primate

Research Emphasis / Objectives

To carry out multidisciplinary studies of reproduction in captive Bolivian squirrel monkeys and to provide a resource of laboratory-born and laboratory-reared animals for NIH-sponsored research programs.

Current Research

Characterizing factors that influence captive reproduction with emphasis on developing methods to improve reproductive potential. A multidisciplinary approach with behavioral studies, reproductive endocrinology, medical primatology, and genetics is ongoing.

Resources Provided

To Outside Investigators

Tissues and body fluids are available. Such specimens are provided on a priority basis to NIH-sponsored research studies that are related to the objectives of this project. Costs of packaging and shipping are negotiated on an individual basis to be determined by the nature of the collaboration.

To Collaborating Scientists

Individuals interested in collaborative studies must provide a protocol to the principal investigator. Approval of collaborative projects depends on the relevance of the proposed project to the objectives of the ongoing research effort. Complete animal husbandry, medical care, and pathology services are available without charge to investigators who have received approval from the principal investigator to use resource colony animals.

Animals

The breeding colony currently contains approximately 450 Bolivian squirrel monkeys of varying ages. Some offspring and reproductive culls are available.

Core Staff

Investigators conducting studies of medical primatology, reproductive endocrinology, data management, primate management and husbandry, primate behavioral psychology, and genetics.

Guest Investigators and Graduate Students

Guest investigators and graduate students interested in studies of factors influencing reproduction of squirrel monkeys in captivity are invited to send letters of interest. These letters will be considered based on the relevance of the applicant's interests to the ongoing research effort and the availability of resources to meet the needs of the guest investigator.

Index Terms

Breeding resource, *Saimiri*, squirrel monkey.

Applied Research for Improving Behavioral Management of Captive Chimpanzees

Yerkes Regional Primate Research Center
Emory University
954 North Gatewood Road NE
Atlanta, GA 30329

Principal Investigator and Contact
Mollie A. Bloomsmith, Ph.D.
404-727-1323 Fax: 404-727-7845
E-mail: mbloomsmith@mindspring.com

Research Emphasis / Objectives

This behavioral research program is designed to improve the care and management of captive chimpanzees. Studies identify factors that influence the production of successful breeders from captive-born animals, identify improvements in the care and behavioral management of chimpanzees, and objectively evaluate forms of environmental enrichment and animal training.

Resources Provided

To Collaborating Scientists and Graduate Students

Individuals interested in collaborative studies must provide a protocol for approval by the principal investigator and the appropriate institutional animal care and use committees.

Index Terms

Animal training, chimpanzee behavior, environmental enrichment, psychological well-being.

Coulston Foundation

Principal Investigator and Contact
Ronald Couch, Ph.D.
505-434-1725 Fax: 505-437-9897

13 Lavelle Road
Alamagordo, NM 88310

Research Emphasis / Objectives

Vaccine development and infectious disease studies, especially retrovirology and hepatitis, in chimpanzees and macaques; studies of the efficacy and safety of potential new pharmaceuticals, including routine and special toxicology, metabolism, pharmacokinetics, residue, and immunogenicity studies; research on primate reproduction and on aging in chimpanzees.

Staff members include medical, scientific, and technical career specialists in reproductive biology, animal husbandry, physiology, virology, immunology, toxicology, comparative pathology, medical primatology, anthropology, and behavior.

Resources Provided

Collaborative research and gross, microscopic, and clinical pathology services are available. Radioimmunoassay, analytical chemistry, bacteriology, virology (P3), and immunology research services are also available.

Animals

The colony consists of about 350 macaques and about 600 chimpanzees. The NCRR-supported chimpanzee biomedical research colony includes about 100 adult and young chimpanzees. Half of the offspring are reserved for future needs; the others are available for collaborative research. The animals held in reserve may also be used for limited research that does not interfere with the project's mission. A detailed protocol is required for review.

Index Terms

Aging, animal husbandry, chimpanzee reproduction, infectious diseases, vaccine development.

Primate Foundation of Arizona

Principal Investigator and Contact
Jo Fritz
480-832-3780 Fax: 480-830-7039
E-mail: jopfa@uswest.net

P. O. Box 20027
Mesa, AZ 85277-0027

Research Emphasis / Objectives

To ensure that behaviorally normal and physically healthy chimpanzees (*Pan troglodytes*) are available for biomedical research and future breeding. To conduct behavioral and environmental enrichment research with a goal of improving captive management of chimpanzees.

Current Research

Development and maintenance of social behaviors, environmental enrichment, colony management including birth control methods.

Resources Provided

The colony is available for research activities that do not interfere with the primary mission of this program. All research conducted at this facility must have prior approval of the chief veterinarian or the director and the institutional animal care and use committee.

Student intern program upon acceptance of application.

Quarterly publication of *The Newsletter*, devoted to reports on chimpanzees.

Index Terms

Chimpanzee behavior, chimpanzee colony management, chimpanzee newsletter, environmental enrichment.

University of Southwestern Louisiana

Principal Investigator and Contact
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New Iberia Research Center
4401 West Admiral Doyle Drive
New Iberia, LA 70560

URL: http://www.usl.edu/Research/NIRC

Research Emphasis / Objectives

To maintain and provide available research facilities accredited by the Association for Assessment and Accreditation of Laboratory Animal Care (AAALAC) International, a ready source of great apes (chimpanzees) of mixed ages and sex for use in biomedical and behavioral sciences, and professional staff necessary to support investigators in their research needs.

Current Research

Vaccine development and testing; pharmacokinetic, pharmacodynamic, preclinical safety, and efficacy studies.

Resources Provided

The University of Southwestern Louisiana New Iberia Research Center (USL-NIRC) is an AAALAC-accredited nonhuman primate research facility dedicated to the support of basic and applied biomedical and behavioral research. All proposed programs must be approved by the presenting institution and the USL-NIRC animal care and use committees. State-of-the-art biomedical support facilities are available that include access to ultrasound, radiography with automatic processor and computer imagery for diagnostic enhancement, and endoscopy and laparoscopy with video monitors, camera and color photo imagery.

Diagnostic Laboratory

Space within a recently constructed 12,000-square-foot laboratory is available for investigators' research support requirements. Capabilities within the laboratory include, but are not limited to, hematology, chemistry, microbiology, urinalysis, parasitology, and histology. Among the investigator support procedures we can provide are ficoll gradient isolation of peripheral blood mononuclear cells, platelet aggregation profiles, nonhuman primate lymphocyte proliferation assay, and flow cytometry (lymphocyte enumeration). Emergency generator power is accessible in each laboratory unit and for all major instrumentation and critical freezers.

Animals

The center cares for approximately 360 chimpanzees and 5,500 New and Old World species of nonhuman primates. In addition to chimpanzees, the following species of nonhuman primates are being maintained at the center: Vervet monkey *(Chlorocebus aethiops)*, cynomolgus macaque *(Macaca fascicularis)*, pigtailed macaque *(M. nemestrina)*, rhesus macaque *(M. mulatta)*.

Index Terms

Animal husbandry, chimpanzee enrichment, chimpanzee health care, chimpanzee reproduction, chimpanzee research, infectious diseases, nonhuman primates, vaccine development.

University of Texas

Principal Investigator and Contact
Michale E. Keeling, D.V.M.
512-321-3991 Fax: 512-332-5208

Additional Contact
D. Rick Lee, D.V.M.
512-321-3991

M. D. Anderson Cancer Center
Science Park
Veterinary Sciences Department
Route 2, Box 151-B1
Bastrop, TX 78602

Research Emphasis / Objectives

To provide physically and behaviorally healthy chimpanzees for critical biomedical research and testing; to conduct relevant research projects of benefit to chimpanzee health, productivity, and well-being; to develop procedures for artificial insemination and embryo collection and transfer.

Current Research

Develop and improve techniques of behavioral rehabilitation; investigate behavioral factors influencing improvements in the husbandry and well-being of chimpanzees; support collaborative programs in genetic management.

Resources Provided

A demographically balanced group of 107 physically and behaviorally healthy chimpanzees to meet current and future research and testing needs in the United States. The colony is housed in eight 4,500-square-feet outdoor corrals in multiple-male family groups. Complete facilities and services are available for visiting scientists. Chimpanzees are available to investigators supported by NIH grants and contracts.

Biological Materials

Tissues and body fluids are available when coordinated with preventive health care procedures.

Index Terms

Chimpanzee behavior, chimpanzee genetics, chimpanzee health care, chimpanzee research, chimpanzee training and enrichment.

Yerkes Regional Primate Research Center

Principal Investigator and Contact
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E-mail: gould@rmy.emory.edu

Additional Contact
Thomas R. Insel, M.D.
404-727-7707 Fax: 404-727-0623
E-mail: insel@rmy.emory.edu

Emory University
Atlanta, GA 30322

URL: http://www.emory.edu/WHSC/YERKES/

Research Emphasis / Objectives

To maintain and study a population of chimpanzees *(Pan troglodytes)* in cooperation with similar NIH-funded projects and ensure availability of physically and behaviorally normal chimpanzees for research and testing.

Current Research

Several investigator-initiated NIH-funded projects are ongoing. The Chimpanzee Biomedical Research Program provides support for an environmental enrichment program, training, and genetic characterization of the colony.

Resources Provided

The Yerkes Center encourages outside investigators to consider chimpanzees for innovative research projects. Such projects must be reviewed by the Yerkes Research Advisory Committee and approved by the center director as well as the Emory Institutional Animal Care and Use Committee.

Specimens

Tissues and body fluids may be obtained at the time of routine health examinations in this research colony of 75 chimpanzees *(Pan troglodytes)*. Cost estimates for collecting, packaging, and shipping are available on request.

Animals

Limited numbers of animals in excess of the needs of the project may be available for research; priority is given to NIH-sponsored projects.

Index Terms

Behavioral training, chimpanzee behavior, chimpanzee research, environmental enrichment.

Herpes B-Virus Diagnosis: National Resource Laboratory

Georgia State University
Viral Immunology Center
Department of Biology
50 Decatur Street
Atlanta, GA 30302-4118

URL: http://www.gsu.edu/bvirus

Principal Investigator and Contact
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Additional Contacts
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E-mail: biopxs@panther.gsu.edu

Tina Callaway
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Research Emphasis / Objectives

To identify B-virus infections in humans and macaques and study basic pathogenesis mechanisms of this and other neurotropic herpesviruses; to develop control and prevention strategies of B-virus infections. All samples evaluated by the resource can be used in ongoing research studies.

Current Research

Assessment of evolutionary conservation among alpha-herpesviruses by biochemical, immunological, and molecular biological approaches; development of recombinant reagents; identification of effective antiviral strategies and design of putative vaccines; elucidation of host-virus interactions during pathogenesis; collaborative identification/exploration of putative alpha-herpesviruses not previously described.

Resources Provided

Diagnostic Services

This laboratory resource is designed to provide rapid virological and serological analyses to identify *Herpesvirus simiae* (B virus) infections in humans and nonhuman primates, particularly macaques. Virological analyses are performed by virus isolation, polypeptide analysis, DNA restriction endonuclease analyses, and experimental polymerase chain reaction (PCR). Serological analyses include enzyme-linked immunosorbent assay (ELISA), competition ELISA, and Western blot analyses. The laboratory also provides telephone and mail information to requestors seeking assistance for identifying infections, and/or CDC-derived information for handling human or macaque cases of B-virus infection. Staff are available for collaboration in investigating cases of B-virus infection in humans and nonhuman primates. Resource staff perform all diagnostic services adjacent to the herpesvirus research laboratory of the principal investigator. This proximity permits consultation with and additional assistance from staff members when required.

Other Services

Specialized biocontainment laboratory (BCL-4) facilities, investigation of new animal models of herpesvirus disease, antiviral testing, epidemiological analyses of alpha-herpesvirus outbreaks, necropsy and autopsy assistance for virological analyses of B-virus infections, assistance in developing SPF primate colonies, and isolation/characterization of nonhuman primate alpha-herpesvirus.

Fees

Cost reimbursement for procedures performed to identify potential B-virus infections in humans and nonhuman primates is requested to maintain the resource.

Index Terms

Herpes B virus, pigtailed macaque, primates, retroviruses, SPF primates.

LABS of Virginia

Principal Investigator and Contact
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E-mail: mkizard@internetx.net

95 Castle Hall Road
P. O. Box 557
Yemassee, SC 29945

Research Emphasis / Objectives

To produce physically and behaviorally normal rhesus and pigtailed monkeys free of *Herpesvirus simiae*, simian retroviruses (SRV), simian immunodeficiency virus (SIV) and simian T-cell leukemia virus (STLV-1); to establish a self-sufficient breeding colony capable of producing several hundred progeny each year for research; to conduct relevant research aimed at efficient colony management, health, productivity, and behavioral well-being.

Resources Provided

To Outside Investigators

Members of this demographically balanced breeding colony of specific-pathogen-free (SPF) rhesus and pigtailed macaques are antibody-negative for *Herpesvirus simiae*, SRV, SIV, and STLV-1. Composed of physically healthy and behaviorally normal animals, this colony of multiple male/female social units is housed in outdoor corrals.

Animals

Antibody-negative progeny are available to Public Health Service-supported investigators for research.

To Collaborating Scientists and Graduate Students

Those wishing to conduct research at this breeding facility must have their projects reviewed and approved by both the sponsor and host institutional animal care and use committees, and receive approval from the project officer of the sponsoring federal agency. The breeding colony is available for multidisciplinary collaborative, noninvasive, nonintrusive projects that are compatible with the breeding objectives of the program. Complete facilities and services are available for collaborative and visiting scientists.

Animals

The rhesus and pigtailed macaque breeding colonies are housed in large outdoor corrals or field cages. The social structure of each breeding unit, typical of the species, is multimale/multifemale groups plus immature offspring. The rhesus colony includes about 1,000 animals housed in 20 social/breeding units; the pigtailed colony includes about 300 animals housed in four social/breeding units.

Index Terms

Animal models, pigtailed macaques, research, rhesus monkeys, SPF primates.

New England Regional Primate Research Center

Principal Investigator and Contact
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508-624-8097 Fax: 508-624-8190
E-mail: prabhat_sehgal@hms.harvard.edu

One Pine Hill Drive
Southborough, MA 01772

Research Emphasis / Objectives

Available animals in this SPF program are assigned to approved AIDS research projects; priority is given to Public Health Service-sponsored projects. This SPF breeding program consists of 300 Indian-origin rhesus monkeys free of *Herpesvirus simiae,* simian immunodeficiency virus, simian T-lymphotropic virus 1, and type D retrovirus. Animals are maintained in a closed colony. Frequent antibody screening is performed to assure SPF status. There are 50 paired common marmosets in the breeding program. The colony consists of 289 animals.

Resources Provided

Scientists wishing to conduct research at the center must have projects reviewed and approved by the center director, the executive committee, and the institutional animal care and use committee. A brochure explaining the collaborative research program is available from the center office. The center's services are available to collaborating scientists. Services include veterinary clinical services, BL3 biocontainment facility, necropsies, clinical pathology and hematology, electron microscopy, and isolation of viral and bacterial agents.

Animals

SPF rhesus monkeys, common marmosets and blood samples are sold, as available, to qualified outside investigators, subject to the approval of the center director. A limited number of common marmosets may be available.

Index Terms

AIDS, models, rhesus monkeys, services, SIV.

University of Southwestern Louisiana

Principal Investigator and Contact
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E-mail: red7435@us1.edu

New Iberia Research Center
4401 West Admiral Doyle Drive
New Iberia, LA 70506

Research Emphasis / Objectives

To establish and maintain a breeding colony of pigtailed macaque *(Macaca nemestrina)* free of simian retroviruses (SRV), simian immunodeficiency virus (SIV), and simian T-cell leukemia virus (STLV-1) for use in AIDS research, and to support basic and applied biomedical research in nonhuman primates.

Current Research

Viral and bacterial vaccine development and testing, pharmacokinetics, therapeutic efficacy and evaluations of conventional pharmaceuticals and monoclonal antibodies.

Resources Provided

To Outside Investigators

The New Iberia Research Center is an AAALAC-accredited nonhuman primate facility dedicated to the support of basic and applied biomedical research. Interested pharmaceutical researchers and NIH-supported investigators are invited to submit study protocols for cost estimates. All program studies must be approved by both sponsor and host institutional animal care and use committees. Blood specimens may be obtained in conjunction with biannual or quarterly health surveillance. These specimens and tissues from routine postmortem evaluations are available for cost reimbursement.

Diagnostic Laboratory

Researchers are supported by a full-service clinical diagnostic laboratory. The laboratory is developing flow cytometry capabilities for enumeration of leukocyte subset populations of chimpanzees and macaques.

Animals

The center houses over 4,500 nonhuman primates and has established breeder colonies of pigtailed, rhesus, cynomolgus, and African green monkeys, and chimpanzees. Many are available on a use-fee basis for nonterminal programs.

Index Terms

Pigtailed macaque, rhesus, SPF primates.

University of Texas

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512-321-3991 x 229

M. D. Anderson Cancer Center
Science Park
Veterinary Sciences Department
Route 2, Box 151-B1
Bastrop, TX 78602

Research Emphasis / Objectives

Establish a production resource of specific-pathogen-free rhesus monkeys, free of retrovirus and *Cercopithecine herpesvirus 1* (B virus), to be used in AIDS-related research; maintain a healthy, productive, socially enriched SPF breeding colony that will help satisfy long-range national research and testing requirements; validate a derivation strategy for converting a conventional breeding colony into an SPF breeding colony; validate enrichment strategies for maintaining psychological health in captive populations of monkeys.

Resources Provided

Animals

After a 30-day first-right-of-refusal to NIH investigators, psychosocially competent rhesus monkeys, free of retroviruses and *Cercopithecine herpesvirus 1* (B virus), are available to other investigators for AIDS and AIDS-related biomedical research.

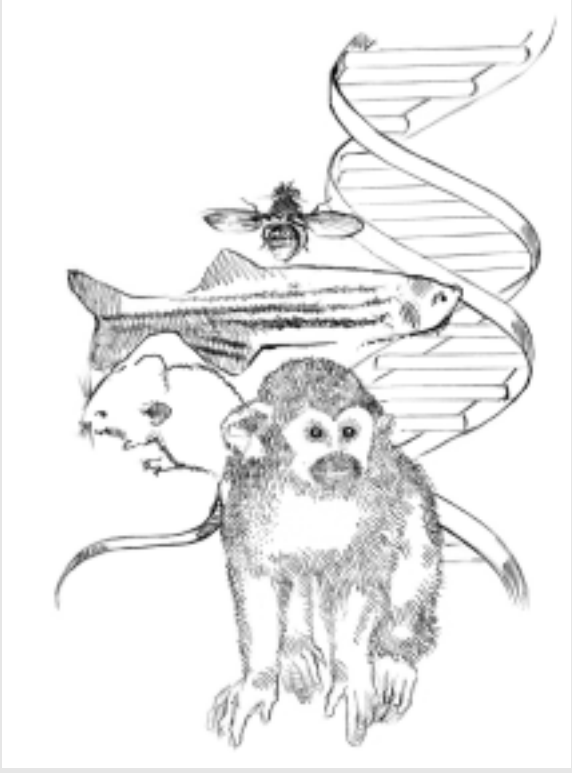
To Collaborating Scientists and Graduate Students

Individuals interested in collaborative research or training programs must provide the principal investigator with a written proposal approved by the sponsoring institution's animal care and use committee. The colony is available for collaborative, noninvasive, nonintrusive investigations. Collaborative research cannot disrupt the breeding and SPF derivation strategy.

Index Terms

Rhesus behavior, rhesus breeding, rhesus genetics, rhesus health care, rhesus psychoneuroimmunology, rhesus research, rhesus training and enrichment.

Genetic Analysis Resources



Genetic Analysis of Complex Traits

Principal Investigator and Contact
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E-mail: jhn4@pop.cwru.edu

Additional Contact
Eric Lauder
Center Genome Research
617-252-1906 Fax: 617-252-1933
E-mail: lauder@genome.wi.mit.edu

Genetics Department, BRB 630
Case Western Reserve University
School of Medicine
10900 Euclid Avenue
Cleveland, OH 44106-4955

Research Emphasis / Objectives

To develop and characterize mouse models for genetically complex human traits and diseases, with emphasis on linkage analysis, modifiers, expression assays, risk factors, and enzyme and protein assays.

Current Research

Development and characterization of new mouse strains for complex trait analysis. Development and application of new assays for metabolite levels, enzyme activities, and gene expression patterns in laboratory mice.

Resources Provided

This resource is in an early stage of development. Novel inbred strains for complex trait analysis are being produced. Panels of consomic strains (also known as chromosome substitution strains) with C57BL/6T and A1J as progenitor strains. Contact principal investigator for listing of strains available.

Index Terms

Complex traits, consomic strains, genetic analysis, mouse models, mouse strains, risk factors.

Genetics Typing Laboratory

Principal Investigator and Contact
David Glenn Smith, Ph.D.
530-752-6343, 8570, or 6665 Fax: 530-752-8885
Message: 530-752-0745
E-mail: dgsmith@ucdavis.edu

Additional Contact
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University of California, Davis
Department of Anthropology
209 Young Hall
Davis, CA 95616

Research Emphasis / Objectives

Identify and characterize previously unknown (including PCR-amplified microsatellite DNA or STR loci) polymorphisms; study the effectiveness of alternative genetic management strategies and the effect of demographic factors on the population/genetic structure of captive groups of primates; identify marker loci for genes that influence susceptibility to retroviral, B-virus, and other infections; and employ both ancient and contemporary mitochondrial DNA and microsatellite DNA loci for studies of ancestor–descendant relationships.

Resources Provided

To Collaborating Scientists and Graduate Students

All principal investigators of NIH-supported specific-pathogen-free (SPF) breeding programs or their designees are eligible to request genetic marker analysis on rhesus macaques (*Macaca mulatta*), crab-eating macaques (*M. fascicularis*), pigtailed macaques (*M. nemestrina*), and other species in SPF colonies; identify paternity; calculate kinship and inbreeding coefficients; estimate parameters of genetic diversity, genetic subdivision, and founder representation within the colony; and collaborate with principal investigators on colony management strategies and on research involving those data; amplify and sequence noncoding control region of mitochondrial DNA extracted from modern and prehistoric (e.g., skeletal) material.

Index Terms

Colony management, genetic diversity, genetic marker, inbreeding, kinship, macaques, mitochondrial DNA, paternity, STR loci.

Genetics Typing Laboratory for Chimpanzees

Principal Investigator and Contact
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301-251-2801 Fax: 301-251-1260
E-mail: jely@bioqual.com

BIOQUAL, Inc.
9600 Medical Center Drive, Suite 200
Rockville, MD 20850

URL: http://www.bioqual.com

Research Emphasis / Objectives

To serve as a research resource for genetic analyses and DNA profiling of chimpanzees (*Pan troglodytes*). PCR-amplified DNA markers are used for paternity ascertainment, pedigree reconstruction, empirical estimates of genetic variation, and population genetic analyses. Mitochondrial DNA sequences are used to infer subspecies/geographical origins of Africa-born founders. This resource compares levels of genetic variation among subspecies using short tandem repeats (STRs or "microsatellites") and other DNA markers. STRs identified every 40–50 cM in the *Pan* genome allow individual-specific DNA profiles, facilitate population comparisons, and can inform conservation genetics activities. Knowledge of subspecies can help increase representation of genetically rare chimpanzees in captivity, as well as help search for mutations in functional genes related to HIV susceptibility or other diseases in both humans and apes.

Resources Provided

This resource performs DNA sequencing and develops DNA polymorphisms in chimpanzees using both functional genes and anonymous DNA markers. STRs are used to determine paternity, reconstruct genealogical relations, quantify genetic variation, and produce individual-specific DNA profiles of population founders. Mutations identified in functional genes are studied for their influence on susceptibility or resistance to diseases including AIDS. The resource monitors levels of inbreeding, conducts pedigree analyses, formulates breeding plans to minimize inbreeding and maintain rare genes in captive populations, and performs other genetics analyses related to small population management.

Animals

Common chimpanzees, bonobos and other great apes.

To Collaborating Scientists and Graduate Students

This resource welcomes collaborations involving co-authored research articles, related research or funding opportunities. Potential collaborators should contact the PI with a brief description of the proposed research. Service requests require tissue shipped to this laboratory (details on request), acknowledgment in resulting publications including theses or dissertations, and two reprints.

Index Terms

Chimpanzees, conservation genetics, DNA profiles, genetic management, mitochondrial DNA, PCR, population genetics, short tandem repeats (STRs).

Referral Center for Animal Models of Human Genetic Disease

Principal Investigator and Contact
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E-mail: sward@vet.upenn.edu

School of Veterinary Medicine
University of Pennsylvania
3800 Spruce Street
Philadelphia, PA 19104

Research Emphasis / Objectives

A major objective is the identification of animal homologs of human disease not previously recognized. After initial ascertainment, potential models are characterized at the clinical, pathologic, and biochemical levels and their homology with the human disorder is assessed. Another objective of the center is to establish a small breeding colony for each promising model. Models in which there is strong evidence of homology and that offer opportunities for investigation of pathogenesis and therapy not currently feasible in humans and not available in other species are further pursued.

Current Research

Current projects involved in the characterization of animal models with inherited metabolic diseases that are potential targets for research on gene therapy include: Alpha mannosidase deficiency (alpha mannosidosis) in the cat; erythrocyte pyruvate kinase-deficient hemolytic anemia in the cat; beta glucuronidase deficiency (mucopolysaccharidosis VII) in the cat and dog; branching enzyme deficiency (glycogen storage disease type IV) in the cat; cystinuria in the dog (candidate gene, renal basic amino acid transport, RBAT gene); cobalamin-intrinsic factor receptor gene defect (selective malabsorption of vitamin B_{12}, Imerslund-Grasbeck syndrome) in the dog. The species-specific genes for these disorders have been cloned or are in the process of cloning and characterization by the center, in collaboration with other investigators. Small nuclear animal colonies of these models are maintained for study. The center is collaborating with Dr. David Wenger of Thomas Jefferson University Medical School to develop a colony of dogs with galactocerebrosidase deficiency (globoid leukodystrophy, Krabbe disease) for studies of gene therapy of this disorder. The canine gene was previously cloned and characterized in Dr. Wenger's laboratory. The center is also characterizing a number of other promising models for the study of genetic disease pathogenesis and gene therapy that have not yet reached the level of molecular genetic characterization. These include X-linked anhydrotic ectodermal dysplasia and autosomal recessive osteogenesis imperfecta in the dog.

Cloning and Characterization of Animal Model Disease Genes

This function is limited by resources to genes for diseases in which the studies can lead to further understanding of pathogenesis in ways not possible in human patients, or which are reasonable candidates for gene therapy studies. Contact Paula Henthorn, Ph.D., 215-898-9061, fax 215-573-2162, e-mail: henthorn@vet.upenn.edu.

Gene Therapy

Potential models for research on gene therapy are evaluated in the context of the present status of the field and the availability of other animal models through contacts in the field. Close contacts are maintained with the Institute for Human Gene Therapy at the University of Pennsylvania. Contact John H. Wolfe, V.M.D., Ph.D., 215-898-2324, fax 215-573-2162, e-mail: jhwolfe@upenn.edu.

Resources Provided

Consultation and Diagnostic Services

The center provides consultation, certain diagnostic services, and preliminary genetic studies to facilitate the discovery and preservation of new and potentially useful animal models. Emphasis is primarily on, but not limited to, models that occur in domesticated species. Services depend on preliminary consultation and evaluation of the potential model by scientists at the referral center. These general classes of genetic diseases are emphasized:

Hereditary Metabolic Diseases

Includes inborn errors of amino acid, organic acid, carbohydrate, and glycosaminoglycan metabolism, enzyme, receptor, and transporter defects. Contact Dr. Urs Giger, 215-898-8830, e-mail: giger@vet.upenn.edu or Dr. Mark Haskins, 215-898-4852, e-mail: mhaskins@vet.upenn.edu.

Hereditary Defects in Sexual Development

Includes male and female pseudohermaphroditism, sex reversal, and true hermaphroditism. Contact Dr. Donald Patterson, 215-898-8880, e-mail: sward@vet.upenn.edu.

Hereditary Congenital Malformations

Includes congenital heart disease and anomalies of other organ systems. Particular emphasis given to isolated malformations or malformation syndromes that may be due to chromosomal anomalies or defects in single major genes. Contact Dr. Donald Patterson, 215-898-8880, e-mail: sward@vet.upenn.edu or Dr. Mark Haskins, 215-898-4852, e-mail: mhaskins@vet.upenn.edu.

Hereditary Hematologic Diseases

Includes defects in erythrocytes, leukocytes, and hemostasis (bleeding disorders). Contact Dr. Urs Giger, 215-898-8830, e-mail: giger@vet.upenn.edu.

Hereditary Diseases of Immune Function

Includes immunodeficiencies and autoimmune disorders. Contact Dr. Urs Giger, 215-898-8830, e-mail: giger@vet.upenn.edu or Dr. Peter Felsburg, 215-898-6678, e-mail: felsburg@vet.upenn.edu.

Services Provided

If an affected animal is believed to represent a potentially new and useful model after the initial consultation, the following services are available:

Clinical Examination

Arrangements for transporting the affected animal to the center are usually the responsibility of the veterinarian or other investigator who makes the referral. If an animal shows sufficient promise as a disease model, the center pays shipping charges. Physical examinations and routine diagnostic tests are performed. If the animal is owned by the client and the exam is primarily in the owner's interest, a reduced fee for clinical services is charged to the owner.

Postmortem/Biopsy Examinations

If biopsy specimens are to be sent after initial consultation, the center provides instructions for tissue fixation and may provide fixatives where needed. Complete postmortem examinations include gross and microscopic studies of organs and tissues, electron microscopy, and special histochemical stains. Some tissues may be stored or cells cultured and stored for metabolic studies and DNA may be prepared for other tests.

Metabolic Disease Screening

This consists of a series of chromatographic and spot tests designed to detect abnormalities in the types or concentrations of metabolites in body fluids. Urine and serum are usually submitted for initial studies. If screening reveals evidence of a metabolic defect, the abnormal metabolites are further evaluated, as appropriate, by gas/liquid chromatography, amino acid analysis, mass spectrometry, enzyme assay, or other laboratory methods.

Hematologic Evaluation

If the initial evaluation suggests an inherited hematologic defect, appropriate erythrocyte, platelet, leukocyte, and macrophage function tests are performed.

Other Biochemical Studies

Results of histologic studies and/or metabolic screening determine the additional studies required. Such examinations include studies of the concentrations of specific substrates in tissues and body fluids by gas/liquid chromatography and mass spectrometry, as well as assays of specific enzymes and receptors and transporters.

Cytogenetic Studies

Currently these studies are confined to the dog and cat and include standard and Giemsa-banded karyotyping and fluorescence in situ hybridization (FISH). These studies are available only on a limited basis and are conducted when preliminary studies yield sufficient evidence to suspect a chromosomal anomaly or when the physical location of the disease gene locus is to be mapped.

Pedigree Analysis

When family data are available or family studies are possible, the center classifies the phenotype of family members and examines pedigree patterns for consistency with various modes of inheritance.

Breeding Studies

The center maintains an animal colony facility that can house a limited number of affected animals and their close relatives for breeding experiments designed to verify whether a defect is inheritable and to determine the mode of inheritance. These studies depend on whether affected animals and their relatives can be obtained as donations or purchased.

Fees for Diagnostic Services

There is no charge for initial consultation with veterinarians or other investigators in the center. Subsequent studies also are free of charge if considered appropriate by investigators at the center. When clinical and postmortem examinations are primarily in the interest of an animal's owner, the owner is charged, usually at a reduced rate.

Availability of Models to Investigators

Another objective of the center is to establish a small breeding colony for each promising model, but the center usually does not serve as a source of animals to be used directly in studies by outside investigators because of limited financial and physical resources. However, once initial characterization of the model is completed, with sufficient lead time breeding stock or semen can be made available to those who wish to start their own breeding colonies. Breeding stock or semen currently is available for the following models:

Hereditary defects of the conotruncal septum (tetralogy of Fallot, ventricular septal defect, persistent truncus arteriosus): dog; hereditary patent ductus arteriosus: dog; mucopolysaccharidosis VI (arylsulfatase B deficiency): cat; phosphofructokinase deficiency (glycogenosis type VII): dog; erythrocyte pyruvate kinase deficiency: cat; alpha mannosidosis (alpha mannosidase deficiency): cat.

Index Terms

Animal homolog, animal models, congenital malformation, diagnostic services, disorders of sexual development, genetic diseases, hematologic disease, hereditary disease, immunologic disease, metabolic diseases.

Statistical Genetic Analysis for Animal Colonies

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Southwest Foundation for Biomedical Research
P. O. Box 760549
San Antonio, TX 78245-0549

URL: http://www.sfbr.org

Research Emphasis / Objectives

For more than a decade, scientists in the Department of Genetics at the Southwest Foundation have developed and used methods of statistical genetic analysis to detect and characterize genetic effects on complex traits in captive animal colonies. Because we feel that the methods are now sufficiently well-developed to warrant broader use, we have initiated a Visiting Scientist Program that will make it possible for visitors to learn these methods. Topics include:

Colony Data Management

Data and database tools, demographic analysis, pedigree management, demographic and genetic modeling.

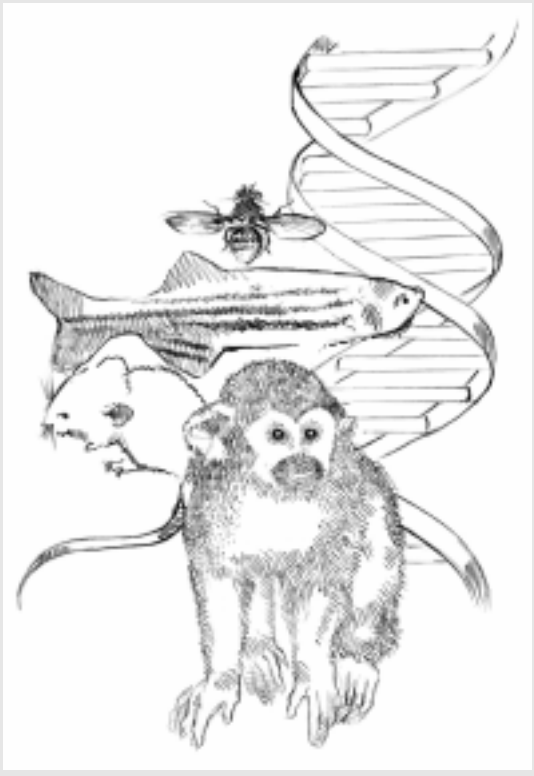
Statistical Genetic Analysis

Data preparation, quantitative genetic analysis, segregation analysis, quantitative trait linkage analysis.

Index Terms

Genetic analysis, genetic modeling, pedigree management, statistical genetics.

Rodent Resources



Cryopreservation of Murine Germplasm

Principal Investigator and Contact
Larry E. Mobraaten, Ph.D.
207-288-6373 Fax: 207-288-6149 or 6079
E-mail: lem@jax.org

Additional Contact
Jackson Laboratory Animal Resources
800-422-MICE or 207-288-5845
Fax: 207-288-6150

The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500

Research Emphasis / Objectives

To assure the safe preservation of scientifically valuable strains of laboratory mice by establishing a bank of frozen mouse embryos and sperm. The program staff is freezing and storing in liquid nitrogen embryos and sperm from selected strains of the more than 2,300 inbred and mutant strains of mice maintained at The Jackson Laboratory. Other objectives are to reduce the necessary number of different stocks or size of colonies maintained by conventional breeding procedures and to retard genetic drift.

Current Research

Cryopreservation of mouse embryos and spermatozoa.

Resources Provided

Reference Services

The repository contains frozen eight-cell mouse embryos and sperm from genetically defined strains of laboratory mice that are maintained at The Jackson Laboratory. Embryos and sperm from more than 1,700 different strains are preserved. Breeding pairs of mice are made available when such mice cannot be obtained from conventional breeding sources.

Index Terms

Cryopreservation, germplasm, mouse embryo, spermatozoa.

Mouse Mutant Gene Resource

The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500

URL: http://jax.org

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Additional Contacts
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Leah Rae Donahue, Ph.D.
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Eva M. Eicher, Ph.D.
207-288-6474 E-mail: eme@jax.org

Research Emphasis / Objectives

To discover and characterize new mouse models of human inherited conditions; to maintain as breeding pairs and preserve as frozen embryos new and established mouse mutations and chromosomal aberrations; to develop genetically suitable stocks of new and established mouse mutations for use in biomedical research; and to make these mutant stocks available to interested investigators in the scientific community.

Resources Provided

This resource encourages collaborations with visiting investigators to screen mutant and wild-derived strains for specific conditions, symptoms, biochemical or physiological defects, behavior, or other phenotypes of interest. The resource provides technical support for users of JAX mice to answer questions regarding genetics, husbandry, and characteristics of mutant mice. All mice can be ordered by calling The Jackson Laboratory's Customer Service Department at 1-800-422-MICE. A fee for mice is charged to partially recover strain maintenance costs and shipping expenses. For more information about the resource, contact any of the four investigators listed above. Updates on strain availability and other information are accessible by Internet at: http://www.jax.org/resources/documents/mmr/.

The online form for submission of strains is available at http://www.jax.org/resources/documents/grc/grcspontout.html.

Mice

This resource maintains strains of mice with specific mutant genes in various categories, including growth and development, reproduction, neurological, neuromuscular, vision and hearing, skeletal, immunological, skin and hair, pigmentation, kidney, and enzyme deficiencies. It also maintains stocks of mice with chromosomal aberrations including inversions, translocations, monosomy, and trisomy. In addition, several wild-derived inbred strains are maintained for linkage crosses. Details of the mouse strains available from The Jackson Laboratory are accessible by Internet at http://www.jax.org/resources/documents/pricelist/ or http://jaxmice.jax.org.

Index Terms

Genetic diseases, genetics, mouse, mouse models, mutations.

National Repository for Transgenic Mice and Rats

The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500

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207-288-6373 Fax: 207-288-6149 or 6079
E-mail: lem@jax.org

Additional Contact
John Sharp, Ph.D.
207-288-6233 E-mail: jjs@jax.org

Jackson Laboratory Animal Resources
Production and Distribution Department
800-422-MICE or 207-288-5845
Fax: 207-288-6150

Research Emphasis / Objectives

The objective of this repository is to make transgenic mouse and rat models of high health quality available to investigators. Current research efforts focus on the cryopreservation of sperm and recovery of offspring from frozen and thawed spermatozoa.

Resources Provided

The National Repository for Transgenic Mice and Rats is an integral part of the Transgenic and Targeted Mutant Repository or Induced Mutant Resource (IMR) at The Jackson Laboratory. The function of the IMR is to select, import, cryopreserve, maintain, and distribute these important strains of mice and rats to the research community. To improve their value for research the IMR also undertakes genetic development of stocks, such as transferring mutant genes or transgenes to defined genetic backgrounds and combining transgenes and/or targeted mutations to create new models for research.

Included in the repository are cancer, immunological, neurological, behavioral, cardiovascular/heart, developmental, metabolic, and other models. A list of all strains may be obtained from the IMR Web site: http://www.jax.org/resources/documents/imr/notes.html In addition to serving as a repository for mouse and rat strains, the National Repository for Transgenic Mice and Rats offers to store and distribute cryopreserved embryonic stem (ES) cell lines carrying targeted mutations.

Index Terms

Cryopreservation, disease models, transgenic mice, transgenic rats.

Transgenic Mice With Altered Calcium Handling

Pharmacology and Cell Biophysics
University of Cincinnati College of Medicine
231 Bethesda Avenue, P.O. Box 670575
Cincinnati, OH 45267-0575

URL: http://blues.fd1.uc.edu/~kraniaeg/P40_Grant1.html

Principal Investigator and Contact

Evangelia G. Kranias, Ph.D.
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E-mail: kraniaeg@email.uc.edu

Research Emphasis / Objectives

The recent development of phospholamban knockout and phospholamban overexpression mice has revealed that phospholamban is a major regulator of basal contractility in the mammalian cardiac, smooth, and skeletal muscles. The regulatory effects of phospholamban are mediated through the Ca^{2+}-ATPase in sarcoplasmic reticulum (SERCA2), the key enzyme involved in muscle relaxation. Dephosphorylated phospholamban is an inhibitor of the sarcoplasmic reticulum Ca^{2+}-ATPase activity, and phospholamban relieves this inhibition. The overall research hypothesis is that alterations in the levels of the sarcoplasmic reticulum Ca^{2+}-ATPase or phospholamban, and the phosphorylated states of phospholamban are associated with alterations in calcium homeostasis and function of the muscles. Thus, the long-range research goal of this resource is to generate animal models with altered expression in each of these two key Ca^{2+}-cycling proteins; and altered expression of phospholamban phosphorylation mutants in cardiac, smooth, and slow-twitch skeletal muscle. These mouse models will be made available to the biomedical community at large to carry out further in-depth studies and to elucidate the mechanisms underlying intracellular calcium regulation and physiological responses in health and disease.

Resources Provided

This resource generates and maintains mouse models with genetic alterations in either phospholamban or the sarcoplasmic reticulum Ca^{2+}-ATPase in cardiac, smooth, or slow-twitch skeletal muscle. These models are initially characterized in the resource and then they are made available to interested investigators in the scientific community. A list of all current models may be obtained from the Sarcoplasmic Reticulum Mutant Mouse Resource (SR-MMR) Web site.

Index Terms

Ca^{2+}-ATPase, calcium, genetics, knockout mouse, muscle, phospholamban, sarcoplasmic reticulum, transgenic mice.

Transgenic and Targeted Mutant Resource

Principal Investigator
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E-mail: mtd@jax.org

Contact
John Sharp, Ph.D.
207-288-6233
E-mail: jjs@jax.org

The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609-1500

URL: http://www.jax.org

Research Emphasis / Objectives

Research is being conducted on both mouse embryo and sperm cryopreservation techniques. Most of the targeted mutants arrive on a mixed 129xC57BL/6 genetic background, and many of these are backcrossed onto an inbred strain (usually C57BL/6J). In addition, new mouse models are being created by intercrossing carriers of specific transgenes and/or targeted mutations. Simple sequence length polymorphism (SSLP) DNA markers are being used to characterize and evaluate differences between inbred strains, substrains, and embryonic stem cell lines.

Resources Provided

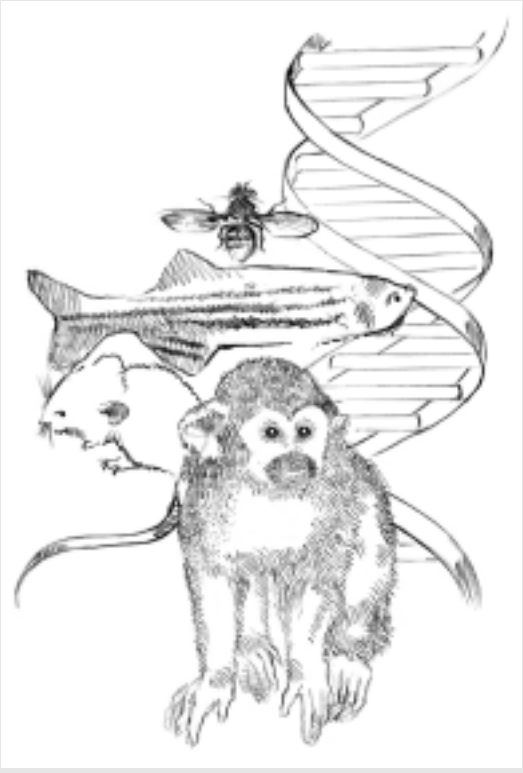
The Induced Mutant Resource (IMR) at The Jackson Laboratory was established in September 1992 in response to concerns from the scientific community regarding the cost, health, and distribution of genetically engineered mice (transgenic, targeted mutant, retroviral insertional mutant, and chemically induced mutant mice). The function of the IMR is to select, import, cryopreserve, maintain, and distribute these important strains of mice to the research community. To improve their value for research, the IMR also undertakes genetic development of stocks, such as transferring mutant genes or transgenes to defined genetic backgrounds and combining transgenes and/or targeted mutations to create new mouse models for research.

In total, 624 mutant stocks have been accepted by the IMR from 1992 through February 1999. Current holdings include 154 cancer models, 51 breast cancer models, 209 immunological and inflammatory models, 112 neurological and behavioral models, 99 cardiovascular and heart models, 151 developmental models, 132 metabolic and other models, and 10 Cre/lox strains. About 8 strains a month are being added to the IMR holdings. A list of all strains may be obtained from the IMR Web site: http://www.jax.org/resources/documents/imr/. Online submission forms are available at http://www.jax.org/resources/documents/imr.

Index Terms

Cryopreservation, disease models, mouse embryo, mouse models, mouse sperm, targeted mutations, transgenic mice.

Zebrafish Resource



National Resource for Zebrafish

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E-mail: monte@uoneuro.uoregon.edu

Contact
Pat Edwards
541-346-5222 Fax: 541-346-4548
E-mail: edwards@uoneuro.uoregon.edu

Zebrafish Stock Center
Institute of Neuroscience
1254 University of Oregon
Eugene, OR 97403-1254

URL: http://zfish.uoregon.edu/zf_info/stckctr/stckctr.html

Research Emphasis / Objectives

To provide a central repository for materials and information about zebrafish research, as well as a stock center for wild-type and mutant strains of zebrafish (*Danio rerio*). Materials and zebrafish strains are distributed to the research community. Pathology services are provided for diseased fish. Standards and procedures for maintaining healthy strains of zebrafish are being developed and a manual for prevention, diagnosis, and treatment of diseases affecting zebrafish is being prepared.

Resources Provided

Animals

Healthy stocks of zebrafish and frozen sperm are maintained and distributed to the research community. Strains of wild-type fish and lines carrying mutations and transgenes are accepted from the research community, maintained, and distributed on request. Embryos preserved in fixative at various developmental stages are available from these lines for histological, biochemical, or molecular biological studies. Researchers are welcome to visit the stock center to screen the collection for mutations of interest or to learn procedures. Advice about zebrafish health is provided. Diseased fish and tissue samples may be sent to the stock center for pathology analysis.

Biological Materials

Antibodies, gene probes, and other markers to analyze wild-type and mutant stocks as well as zebrafish cell lines are received, stored, and distributed.

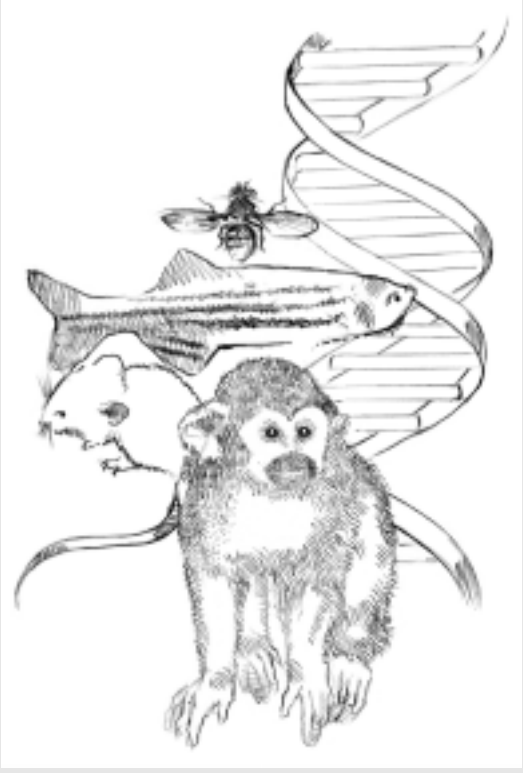
Informatics

An online database, ZFIN (http://zfish.uoregon.edu/zfin), of information about zebrafish research is maintained including information about zebrafish genetics, genomics, and development. Information about the resources and services provided by the stock center is available, as well as a listing of zebrafish researchers, laboratories, and publications. ZFIN integrates information about the genetic map being generated by the zebrafish genome initiative and provides links to related information about genes in other species-specific databases. Researchers can use ZFIN to register and submit to the nomenclature committee new names for mutant alleles and for genes identified by molecular cloning.

Index terms

Antibodies, cell lines, *Danio rerio*, database, DNA, genetic map, genetics, genomics, mutations, stock center, zebrafish.

Invertebrate Resources



Bloomington Drosophila Stock Center

Department of Biology
Indiana University
1001 E. 3rd Street
Bloomington, IN 47405-3700

URL: http://flystocks.bio.indiana.edu/

Principal Investigator and Contact
Kathleen A. Matthews, Ph.D.
812-855-5782 Fax: 812-855-2577
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Coinvestigators
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812-855-3033
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Kevin R. Cook, Ph.D.
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E-mail: kcook@bio.indiana.edu

Research Emphasis / Objectives

The center collects, maintains, and distributes genetically defined strains of *Drosophila melanogaster* with significant research value. Emphasis is placed on genetic tools that are useful to a broad range of investigations. These include basic stocks for genetic analysis such as marker, balancer, mapping, and transposon-tagging strains; mutant alleles of identified genes; defined sets of deficiencies and a variety of other chromosomal aberrations; engineered lines for somatic and germline clonal analysis; GAL4 and UAS lines for targeted gene expression; lacZ-reporter enhancer trap stocks with defined expression patterns for marking tissues; and a collection of mapped marked-transposon-tagged lethals.

Resources Provided

Over 7,000 strains are currently available. Up-to-date stock lists are available for searching, browsing, or copying at the Internet site. An order form is available at the same site. One small subculture is provided of each requested stock. Larger quantities of animals cannot be provided by the center. Requests may be submitted by e-mail to flystocks@bio.indiana.edu. Stock center scientists are available to answer questions about center stocks, use of the database, or general questions about *Drosophila* genetics for researchers new to the field.

New users of the collections must contact the center for a Bloomington user number (BUN) before ordering stocks. User fees are assessed at the beginning of each year for the previous year's use. Fees range from $100 (for up to 20 stocks in up to 6 shipments) to $600 plus $8 per shipment over 12 shipments (for more than 500 stocks).

Index Terms

Drosophila, fly, genetic tools, mutants, transposons.

Caenorhabditis Genetics Center

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University of Minnesota
250 BioScience Center
1445 Gortner Avenue
St. Paul, MN 55108-1095

URL: gopher://elegans.cbs.umn.edu

Research Emphasis / Objectives

The Caenorhabditis Genetics Center (CGC) acquires, maintains, and distributes genetic stocks and information about stocks of the small free-living nematode *Caenorhabditis elegans* for use by investigators initiating or continuing research on this genetic model organism. The CGC acquires and maintains a *C. elegans* bibliography and publishes and distributes a *C. elegans* research newsletter, *The Worm Breeder's Gazette* (*WBG*), and a *WBG* subscriber directory. The CGC acts as a clearinghouse for genetic nomenclature and maintains the *C. elegans* genetic map; these latter functions are managed as a subcontract from the CGC by Dr. Jonathan Hodgkin at MRC Laboratory of Molecular Biology, Cambridge CB2 2QH, England. The *C. elegans* WWW server (http://elegans.swmed.edu), which provides a single point of access to all *C. elegans* information available on the Internet, is supported by the CGC as a subcontract to the University of Texas Southwestern Medical Center and Dr. Leon Avery.

Resources Provided

Animals

The CGC's collection of more than 3,400 strains includes one allele of each mapped gene, all available chromosome rearrangements, and selected multiple-mutant stocks for genetic mapping. The CGC also has stocks of nematode species closely related to *C. elegans.* Requests for strains should include a brief statement of the research or training activity for which the stocks are intended. Information about CGC stocks can be obtained at gopher://elegans.cbs.umn.edu.

The Worm Breeder's Gazette

The *WBG* is distributed worldwide to approximately 600 subscribers who pay a small subscription fee. Each volume consists of six issues distributed over 2 years. Except for the last issue of each volume, which is devoted to an updated genetic map, the *WBG* includes short abstracts of preliminary findings, work in progress, and other news about *C. elegans.* An electronic version of the *WBG* is available at http://elegans.swmed.edu/wli. An updated *WBG* subscriber directory is available at gopher://elegans.cbs.umn.edu.

Nomenclature Information

Recommended guidelines and persons to contact for specific questions about *C. elegans* genetic nomenclature can be found at http://elegans.swmed.edu/Genome/nomen.html.

CGC Bibliography

A periodically updated *C. elegans* bibliography, including abstracts, is available at gopher://elegans.cbs.umn.edu (also accessible from http://elegans.swmed.edu/).

Index Terms

Caenorhabditis elegans, nematode, nematode bibliography, stock center, *Worm Breeder's Gazette,* worm nomenclature.

Microarray Resource for *C. elegans*

Principal Investigator and Contact
Stuart K. Kim, Ph.D
650-725-7671 Fax: 650-725-7739
E-mail: kim@cmgm.stanford.edu

Department of Developmental Biology
Stanford University Medical School
Stanford, CA 94305

URL: http://cmgm.stanford.edu/~kimlab/wormchipdirectorybig.html

Research Emphasis / Objectives

DNA microarrays can be used as powerful tools to determine changes in gene expression patterns, such as changes in gene expression in mutants, in transgenic animals expressing disease-related genes, and in animals that have been treated with various drugs. In 1998, the full genomic sequence of *C. elegans* was finished. *C. elegans* is the only animal with a fully sequenced genome, and we can use DNA microarrays to profile the transcriptional pattern of every gene. For this purpose, we have generated DNA microarrays containing essentially all of the genes in the *C. elegans* genome (approximately 19,000 genes).

Our main objective is to provide DNA microarray technology to the *C. elegans* academic community by performing DNA microarray experiments for *C. elegans* academic laboratories.

Resources Provided

DNA Microarray Experiments

The microarray center will perform DNA microarray experiments using RNA samples supplied by each laboratory. Information on how to contact the center, grow worms, and prepare RNA can be found in the URL above. The microarray center can perform approximately 1,000 microarray experiments per year, on a first come/first served basis. Data from the microarray experiments are stored on a Sun workstation at Stanford, and can be accessed via the Internet.

Data Analysis

The microarray center will provide software for analysis of the large amounts of gene expression data generated by microarray experiments. Examples of software programs include a program to generate lists of genes that are up- or down-regulated in a particular experiment, a program to cluster genes based on common gene expression patterns from multiple microarray experiments, and a program to cluster experiments based on common patterns of target genes.

Gene Expression Patterns

The entire set of experiments performed by the microarray center can be used to cluster genes based on coordinate expression patterns. The results of this cluster analysis are publicly available from the URL shown above. Without having to perform a microarray experiment, this list of clustered genes permits anyone to find genes that are coordinately regulated with a particular *C. elegans* gene.

Index Terms

C. elegans, chips, DNA microarray, gene clusters, gene expression.

National Resource for Aplysia

Principal Investigator
Patrick J. Walsh, Ph.D.
E-mail: pwalsh@rsmas.miami.edu

Contact
Thomas R. Capo
305-361-4941 Fax: 305-361-4934
E-mail: tcapo@rsmas.miami.edu

Rosenstiel School of Marine and Atmospheric Science
University of Miami
4600 Rickenbacker Causeway
Miami, FL 33149

URL: http://www.rsmas.miami.edu/groups/sea-hares

Research Emphasis / Objectives

To provide research investigators with laboratory-reared *Aplysia californica* of known age and standardized environmental background, as well as their food source.

Current Research

Primary goal is to optimize and standardize *Aplysia* used by NIH investigators. This includes a health monitoring program based on water quality testing and animal bacteriological screening. Ancillary projects include genetics studies to characterize the variation of laboratory-reared animals in comparison to natural populations, and neurophysiological studies of the nervous system during development.

Resources Provided

To Outside Investigators

Sibling animals of known ages and stages are available to investigators throughout the year. On request *Aplysia* and their food (red seaweed) are shipped via Federal Express, overnight priority. Shipping and handling costs are charged to the investigator. Special cohorts, procedures, or manipulations of animal groups can be arranged by contacting the persons named above.

Animals

The colony currently contains more than 10,000 laboratory-reared animals at various life stages and known ages. All animals are produced from field-collected broodstock, monitored for health, and randomly tested for behavioral responses prior to shipping.

Core Staff

Includes investigators carrying out studies of life history, animal husbandry, disease prevention, genetic variability, and neurophysiology.

Guest Investigators and Graduate Students

Guest investigators and graduate students interested in studies of life history, culture, genetics, and neurophysiology are encouraged to inquire. Selection will be based on the relevance of the proposed study and the availability of resources to meet individual needs.

Index Terms

Aplysia, gastropod, invertebrate animals, marine animals, mollusk, neurophysiological model.

National Resource Center for Cephalopods

Principal Investigator
Phillip G. Lee, Ph.D.

Contacts
John W. Forsythe, M.S.
409-772-2133 Fax: 409-772-6993
E-mail: jwforsyt@utmb.edu

Phil E. Turk, M.S.
E-mail: peturk@utmb.edu

The Marine Biomedical Institute
University of Texas Medical Branch
Galveston, TX 77555-1163

URL: http://www.nrcc.utmb.edu/

Research Emphasis / Objectives

To serve the biomedical research community's increased needs for alternative invertebrate models by maintaining a consistent year-round supply of live cephalopod mollusks. These animals are suitable for a wide range of physiological and molecular biological investigations.

Current Research

Investigations are being conducted in the area of life history related to improved animal husbandry. Further studies focus on improving culture system design through development of computer automation and innovative water filtration technology. Current biomedical research on cephalopods includes neurophysiology of the giant axon; anatomy and neurophysiology of the equilibrium receptor organ as a comparative model of the vestibular system of invertebrates; chemoreception, basic nutrition, and protein metabolism; cellular receptor function; and brain, behavior, and learning.

Resources Provided

The NRCC has built a computer-automated, environmentally controlled, recirculating seawater laboratory for the purpose of culturing cephalopods. The tank systems can be used to conduct a variety of experiments never before possible with cephalopods.

To Outside Investigators

Visiting researchers have access to dedicated facilities, including wet and dry laboratory space, office space, computer support and accommodations, as well as priority access to all available live animal resources. Off-site investigators can have live animals, dissected animal tissues/body fluids from all life stages, and a variety of molecular reagents (gene libraries and clones) delivered year-round. Staff expertise and an extensive library are available.

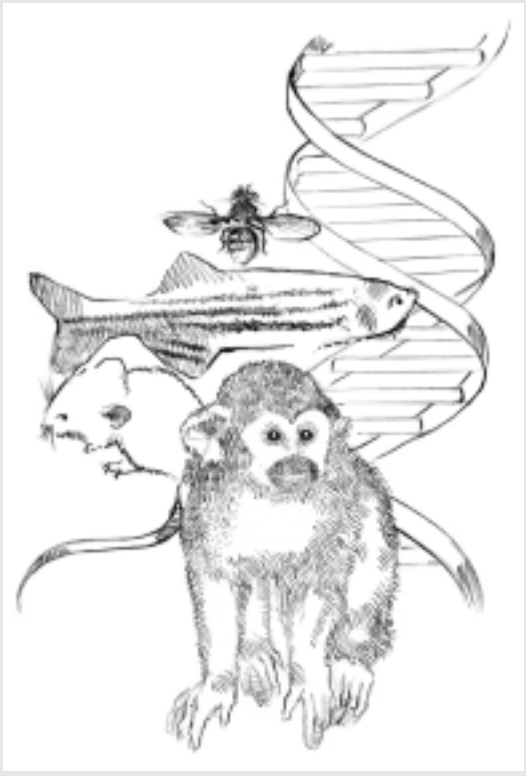
Animals / Materials

All life stages of the squid *Sepioteuthis lessoniana* and the common cuttlefish *Sepia officinalis* are available year-round from laboratory culture populations. The squid *Lolliguncula brevis* is available year-round from local waters; the squids *Loligo opalescens*, *Loligo pealei*, and *Loligo plei* can be obtained seasonally on request. The chambered nautilus, *Nautilus pompilius*, and *Octopus bimaculoides* are available on request. Animal costs vary by species and size. Any tissue or body fluid from these animals can also be provided. Fees for special services are negotiated on a case-by-case basis.

Index Terms

Animal resource, cuttlefish, invertebrate model, neurophysiology, octopus, squid.

Biological Materials Resources



American Type Culture Collection

Principal Investigators
Robert Hay, Ph.D.
703-365-2739
E-mail: rhay@atcc.org

Shung-Chang Jong, Ph.D.
703-365-2742
E-mail: sjong@atcc.org

Contact
Pamela Barnes
703-365-2779 Fax: 703-365-2779
E-mail: pbarnes@atcc.org

10801 University Boulevard
Manassas, VA 20110-2209

URL: http://www.atcc.org/

Research Emphasis / Objectives

To develop or otherwise acquire, preserve, authenticate, and distribute microorganisms, cell lines, recombinant DNA materials, and their associated databases to the scientific community; to sequence and store microbial and human genome materials plus related information.

Current Research

Application of classical and molecular techniques for viral authentication and viral relationship studies; development of optimal methods for preservation of viruses currently difficult to preserve; development of sensitive immunological techniques for studying viruses; preservation of labile and nonmechanically transmitted viruses; improvement of purification, characterization, and production of specific antisera for identifying and taxonomically comparing viruses.

Characterization, classification, and propagation of germplasm; preservation and distribution of germplasm.

Isolation, development, and authentication of human normal and tumorigenic cell lines and of cell lines for vaccine manufacture or genetic therapy; basic research on cell physiology, metabolism, and genetics, microbial genomics and diversity, microbial systematics, evolutionary and environmental biology, and eukaryotic genomic diversity.

Bioinformatics and computational biology; development of software tools for microbial identification and integration of taxonomic data.

Extremophile cultivation, preservation, and metabolism; developmental biology of stem cells.

Resources Provided

ATCC supplies authentic cultures of over 86,000 different strains of microbes, cell cultures, and DNA materials (more than 6,000 species and 1,500 genera) to the scientific community and furnishes complete information on their history and properties. Currently available are bacterial strains, cell lines and hybridomas, recombinant materials, filamentous fungi and yeasts, protozoa and algae, plant viruses and antisera, animal viruses, chlamydia, rickettsia, and antisera.

ATCC's virology collection, the largest diversified repository of reference and prototype virus strains in the world, includes more than 2,000 animal viruses, animal viral antisera, chlamydia, molecular clones, oncogenes and proto-oncogenes, and over 900 plant viruses, plant viral antisera, and molecularly cloned plant viruses. The cell repository includes the most diverse collection of human normal and tumorigenic lines, plus lines from 80 other species.

ATCC offers technical services and information about microbial systematics, cultivation, preservation, morphology, pathology, toxicology, molecular biology, genetics, ecology, and evolution. Questions are answered about strains, nomenclature, classification, characterization, preservation techniques, and special applications of cultures.

Index Terms

Cell lines, DNA, hybridomas, microorganisms, plant and animal viruses.

Human Developmental Anatomy Center

Principal Investigator
Adrianne Noe, Ph.D.

Contact
Elizabeth C. Lockett
202-782-2682 Fax: 202-782-3573
E-mail: lockett@afip.osd.mil

National Museum of Health and Medicine
Armed Forces Institute of Pathology
6825 16th Street, NW
Washington, DC 20306-6000

URL: http://www.afip.org

Research Emphasis / Objectives

The Human Developmental Anatomy Center (HDAC) acquires and maintains collections pertaining to general developmental anatomy and neuroanatomy. Access to the collection or images provided from the collection are available for researchers who are pursuing research in human and comparative development or neuroanatomy.

Resources Provided

The human and comparative developmental collection at HDAC is the largest in the United States. This collection includes documents, photographs, models, and glass slides. Inventories are available on request. Samples of images and data from the human developmental collection can be found at http://www.natmedmuse.afip.org. Extensive neuroanatomical collections contain thousands of human and animal brains; inventories are available on request. Information about the neuroanatomical holdings can be found at http://www.neurophys.wisc.edu/brain/NMHM.html.

Workstations with electronic file transfer capabilities and digital imaging devices are available for researcher use.

Requests for access to the collections should include a brief description of the project, the type of material needed, and anticipated length of stay.

Index Terms

Anatomy, embryology, neuroanatomy.

National Cell Culture Center

Principal Investigator and Contact
Mark Hirschel, Ph.D.
800-325-1112 or 612-786-0302 Fax: 612-786-0915
E-mail: hirschel@nccc.com or
ncccinfo@nccc.com

Cellex Biosciences, Inc.
8500 Evergreen Boulevard
Minneapolis, MN 55434

URL: http://www.nccc.com

Research Emphasis / Objectives

The National Cell Culture Center is a national resource established to provide customized, large-scale cell culture services for basic research laboratories at minimal expense.

Resources Provided

All basic research investigators are eligible to use this nonprofit national resource. The center provides large-scale production of mammalian cells—suspension culture (1 to 400 liters per day), anchorage-dependent culture (1 to 200 roller bottles per batch), insect/baculovirus culture (1 to 50 liters per day), purified monoclonal antibodies (10 mg to 100 grams per project), nonhybridoma cell-secreted proteins, and conditioned media.

Each cell line or custom protocol is adapted to large-scale production, and cells are delivered in the quantity and frequency requested. Numerous common cell lines, such as HeLa, CHO, Sf9/baculovirus, hybridomas, etc., are also produced routinely. Cell banking and storage services are available.

To access these services, investigators should ask the center for a Services Request Form. This form and a brief description of the research project must be submitted before any work can be performed. All work is confidential.

Index Terms

Antibodies; baculovirus; cell culture, large scale; CHO cells; HeLa cells; insect cells; mammalian cells; monoclonal antibody; Sf9 cells.

Yeast Genetic Stock Center

Principal Investigator
Shung-Chang Jong, Ph.D.
Director, Microbiology
703-365-2742

Contact
Kerong Tom Gu, Ph.D.
Yeast Geneticist
703-365-2822 Fax: 703-365-2730
E-mail: kgu@atcc.org

Ordering Information
1-800-638-6597 Fax: 703-365-2750
E-mail: sales@atcc.org

American Type Culture Collection
10801 University Boulevard
Manassas, VA 20110-2209

URL: http://www.atcc.org

Research Emphasis / Objectives

The major objective of the Yeast Genetic Stock Center (YGSC) is to acquire, authenticate, preserve, produce, develop, and distribute genetically defined strains of the yeast *Saccharomyces cerevisiae* and related biological materials and information. Although several other collections maintain yeast strains for taxonomic and other applications, the YGSC is the only catalogued collection in the world that exclusively maintains genetically marked *S. cerevisiae* stocks.

Current Research

Projected research focuses on improvement of the traditional collection mission: Yeast genetic stocks acquisition, accession, quality control, quality assurance, preservation, production, distribution, information services, and data management. Additional, externally funded research may target study of gene regulation.

Resources Provided

Yeast Genetic Stocks and Cloning Vectors

The American Type Culture Collection (ATCC) has more than 14,400 strains of *S. cerevisiae*, including more than 13,500 strains bearing defined mutations. In addition to the stocks of *S. cerevisiae*, ATCC has 50 other yeast species representing more than 20 genera. The current collection includes more than 1,200 yeast cultures transferred from the University of California at Berkeley. The broad categories of mutations carried by the YGSC include auxotrophic markers, temperature-sensitive lethals, markers conferring sensitivity to radiation, fermentation markers, mitochondrial markers, morphological markers, other smaller genotypic categories, and a set of 11,000 knockouts made in both haploid mating types and as diploids by the Saccharomyces Genome Deletion Project. ATCC also maintains *S. cerevisiae/Escherichia coli* cloning and expression shuttle vectors, *S. pombe/E. coli* shuttle vectors, YACs and cosmids, genomic and cDNA libraries, and clones derived from yeast sources.

Services Provided

Information Center

The YGSC serves as an information center for yeast genetics, distributing not only yeast strains but also strain history and techniques in yeast genetics. A periodically updated catalogue of available strains is displayed at the ATCC Web site (http://www.atcc.org).

The ATCC Web site also provides for electronic order placement, forms, and permits required for certain strains, and hypertext links to other databases or directories of information. The Web site is updated monthly; new strains and other products and services are publicized.

Backup Collection

The ATCC acts as a backup collection for depositors who can request their own cultures in the YGSC at any time without charge.

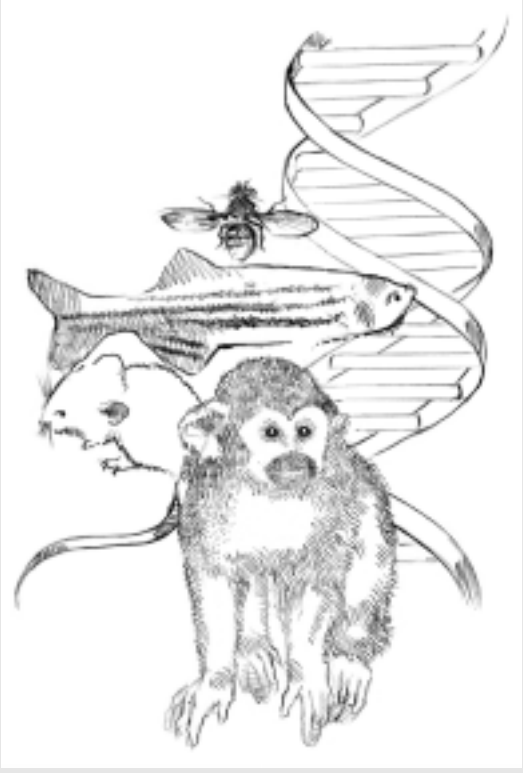
Special Yeast Strain Construction Services

ATCC staff will construct new yeast genetic strains for investigators on special request.

Index Terms

cDNA library, genetic map, genetic stock center, genomic library, library, *Saccharomyces cerevisiae*, yeast.

Information Resources



Captive Population Dataset Assembly and Tracking, Analysis, and Modeling

International Species Information System (ISIS)
12101 Johnny Cake Ridge Road
Apple Valley, MN 55124-8151

URL: http://www.isis.org

Principal Investigator and Contact
Nathan R. Flesness, B.S.
612-431-9295 Fax: 612-432-2757
E-mail: nate@isis.org

Additional Contact
Rick Lukens, M.S.
612-431-9341
E-mail: ricklukens@compuserve.com

Research Emphasis / Objectives

To contribute to the preservation of biotic diversity by providing global specimen and species catalogs and auxiliary information services; to support long-term collective species conservation and preservation programs.

Resources Provided

To Outside Investigators

ISIS is an information center designed to provide population data collection, analysis, and management expertise in support of national chimpanzee biomedical research colonies. Gross pooled animal inventory and specific chimpanzee information is provided to the Chimpanzee Biomedical Research Program.

To Collaborating Scientists and Graduate Students

Opportunities exist for collaborative investigations using assembled studbook dataset for chimpanzees, and sophisticated software for demographic and genetic analysis. No animals are held or otherwise retained by ISIS.

Index Terms

Biotic diversity, chimpanzee genetics, population data, species conservation.

EcoCyc: Encyclopedia of *E. coli* Genes and Metabolism

Principal Investigator
Peter D. Karp, Ph.D.
650-614-7066 Fax: 650-324-9313
E-mail: pkarp@pangeasystems.com

Pangea Systems, Inc.
4040 Campbell Avenue
Menlo Park, CA 94025

URL: http://ecocyc.PangeaSystems.com/ecocyc/

Research Emphasis / Objectives

To provide a comprehensive database describing all known *E. coli* genes and all known enzymes and pathways of *E. coli* metabolism.

Current Research

Develop a bioinformatics toolkit for querying, analyzing, and visualizing integrated genomic and metabolic data.

Add descriptions of *E. coli* transporters and genetic regulatory mechanisms to EcoCyc. Develop an expanded microbial pathway database that describes pathways for many microbes in addition to *E. coli*.

Resources Provided

An active EcoCyc WWW server is maintained, and the X-windows version of EcoCyc is distributed. Data are available in a variety of formats.

Index Terms

Database, *E. coli*, genome, metabolic pathways, metabolism.

Institute for Laboratory Animal Research

Principal Investigator and Contact
Ralph B. Dell, M.D.
202-334-2595 Fax: 202-334-1687
E-mail: rdell@nas.edu

Contact
Kathleen A. Beil
Administrative Assistant
202-334-2590 Fax: 202-334-1687
E-mail: ilar@nas.edu

National Research Council
2101 Constitution Avenue, NW
Washington, DC 20418

URL: http://www4.nas.edu/cls/ilarhome.nsf

Research Emphasis / Objectives

To develop and make available to the biomedical community scientific and technical information, guidelines, surveys, and directories as a service to improve the availability, quality, and use of laboratory animals.

Resources Provided

The Institute for Laboratory Animal Research (ILAR) develops guidelines on laboratory animal care and use, and conducts conferences, symposia, and workshops on important laboratory animal problems. ILAR publishes the *ILAR Journal* on a quarterly basis, as well as conference proceedings and special reports prepared by committees of experts. A list of ILAR publications on laboratory animals is available at the Web site. As a part of the Animal Models and Genetic Stocks Information Exchange Program, ILAR staff members answer direct telephone and mail inquiries, and maintain a Web page containing a database on animal models and genetic stocks (http://www2.nas.edu/amgs) that contains information on the existence and location of specific animal models, correct nomenclature to identify animals, and related topics such as facilities, diseases of animals, and relevant publications. ILAR also aids in the relocation of genetic stocks that cannot be maintained at their original sites.

Index Terms

Animal care, animal diseases, animal location, animal resources, laboratory animals, occupational health.

Laboratory Primate Newsletter

Brown University
Department of Psychology
Box 1853
Providence, RI 02912

URL: http: / / www.brown.edu / Research / Primate /

Principal Investigator
J. Michael Walker, Ph.D.
401-863-2048 Fax: 401-863-1300

Editor and Contact
Judith E. Schrier, M.Sc.
401-863-2511 Fax: 401-863-1300
E-mail: primate@brown.edu.

Research Emphasis / Objectives

To provide news and information that will be of help and interest to persons involved in research with nonhuman primates.

Resources Provided

The resource has published the *Laboratory Primate Newsletter* quarterly since 1962. Major categories of information provided are the care, breeding, and supply of nonhuman primates for laboratory studies; general information and news bearing on research with nonhuman primates; requests for research material or for information related to specific research problems; and conservation of nonhuman primates. A *Directory of Graduate Programs in Primatology and Primate Research* is issued periodically. The mailing list is limited to persons who have a legitimate, relatively long-term professional connection with primate research either directly or in some supportive role. Current issues are free of charge; back issues are available for $3 each (checks payable to Brown University), and all back issues to 1985, as well as the current issue, are on our Web site. The *Newsletter* is available by electronic mail through an electronic list. To subscribe via e-mail, send the message: Subscribe LPN-L your-own-name to listserv@brownvm.

Index Terms

Primate breeding, primate newsletter, primate research, primate supply.

Primate Information Center

Principal Investigator
Debra Ketchell, M.L.
206-543-5531 Fax: 206-543-3389
E-mail: ketchell@u.washington.edu

Additional Contacts
Jackie Pritchard, Manager
Chizuko Otsuka--Gooding, Office Manager
206-543-4376 Fax: 206-616-1540
E-mail: pic@u.washington.edu

Primate Information Center
1101 Westlake Avenue North
Seattle, WA 98109

URL: http://healthlinks.washington.edu/pic/

Research Emphasis / Objectives

To provide fee-based bibliographic information to researchers, educators, and students interested in any area of nonhuman primate research.

Resources Provided

Current Primate References

This monthly bibliographic journal lists newly indexed nonhuman primate research literature in broad subject fields. Each issue has an author and taxonomy index, and there is an annual cumulative author index.

Custom Searches

Custom searches are performed on a request basis using an established fee schedule that includes special student rates. For researchers with ongoing research interests, custom search formulations can be run against the database each month.

PRIMATELIT Database

PrimateLit is a Web-based database of over 150,000 citations to nonhuman primate research dating back to 1940. For information on accessing this database, please contact the Primate Information Center.

Topical Bibliographies

A large number of titles on nonhuman primate research are available for sale. Contact Chizuko Otsuka-Gooding for a complete price list.

Index Terms

Primate bibliographies, primate database, primate journal, primate literature, primate research.

Primate Supply Information Clearinghouse

Washington Regional Primate Research Center
Box 357330
University of Washington
Seattle, WA 98195-7330

URL: http://www.rprc.washington.edu/psic/

Principal Investigator
William R. Morton, V.M.D.
206-543-1430 Fax: 206-685-0305

Project Coordinator
Cathy A. Johnson-Delaney, D.V.M.

Contact
Erik McArthur, B.S.
206-543-5178 Fax: 206-616-1710
E-mail: psic@bart.rprc.washington.edu

Research Emphasis / Objectives

To promote conservation of nonhuman primates by reducing laboratory demand on wild populations, to make the best possible use of available research primates in the United States by facilitating the sequenced use of nonhuman primates in biomedical research, and to effect speedier communication among users. Investigators and colony managers are invited to list their animals available for transfer or sharing and to consult the clearinghouse regarding availability of animals, etc., for new projects.

Resources Provided

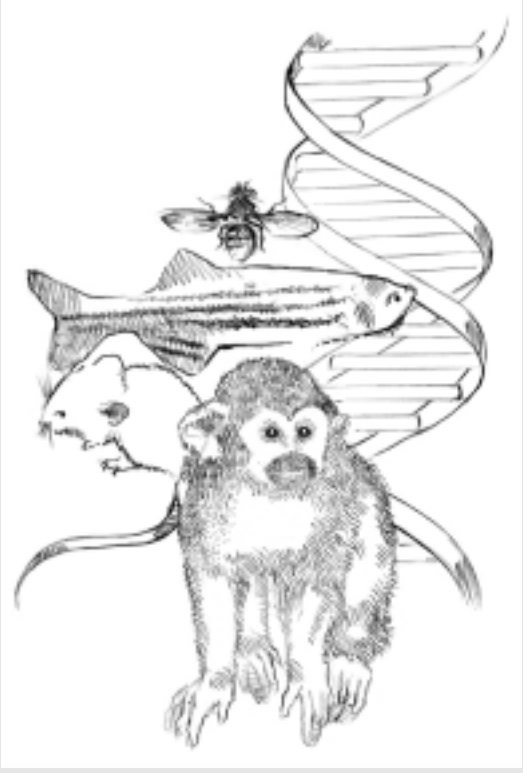
The clearinghouse matches research needs for nonhuman primates and primate materials—such as blood samples, tissues, and cadavers—with resources available from other institutions. Any needs and availabilities that are not immediately matched are published in *New Listings,* a twice-monthly newsletter. Other publications include *Continuous Listings,* published every other month, listing long-term programs; and the *Annual Resource Guide,* which lists commercial primate suppliers and programs. The clearinghouse also has a database of colonies and primates and primate materials to which notices of availability and need can be referred. The PSIC maintains a Web site that includes program information, subscription forms, taxonomy, and links to other Web sites concerning regulations, laws, and primate trade.

Services are available without charge to government-supported researchers and to other scientists in the United States using primates in their work. Services are also available to scientists in other countries.

Index Terms

Primate clearinghouse, primate conservation, primate newsletter, primate supply.

Institutional and Short-Term Training Awards



University of Alabama at Birmingham

Principal Investigator
Philip A. Wood, D.V.M., Ph.D.
Professor and Chairman
Department of Comparative Medicine
University of Alabama at Birmingham
1670 University Boulevard
401 Volker Hall
Birmingham, AL 35294-0019
205-934-2117 Fax: 205-975-4418
E-mail: paw@uab.edu
URL: http://www.uab.edu/compmed/

Number of Trainees

Six trainees

Major Areas of Interest

Cellular and molecular mechanisms in inherited metabolic diseases, gene expression and therapy, transgenic/embryonic stem cell animal modeling, role of integrins in urinary tract diseases, pathogenesis of mycoplasmal and viral diseases, regulation of respiratory immune responses, role of leukocyte adhesion molecules in inflammatory diseases, Alzheimer's disease, and pathogenesis of cardiovascular disease.

Index Terms

Alzheimer's disease, cardiovascular diseases, inflammatory diseases, integrins, metabolic diseases, mycoplasma.

University of California, Davis

Principal Investigator
Stephen W. Barthold, D.V.M., Ph.D.
Professor and Director
Center for Comparative Medicine
University of California, Davis
One Shields Avenue
Davis, CA 95616
530-752-7913 Fax: 530-752-7914
E-mail: swbarthold@ucdavis.edu

Number of trainees

Four trainees

Major Areas of Interest

Comparative pathology, microbiology/immunology, mouse biology, and toxicology.

Index Terms

Comparative pathology, mouse biology, toxicology.

University of Florida

Principal Investigator
Jerry K. Davis, D.V.M., Ph.D.
Director, Division of Comparative Medicine
University of Florida
1600 SW Archer Road
Gainesville, FL 32610-0006
352-846-0970 Fax: 352-392-3766
E-mail: jkd@vpha.health.ufl.edu

Number of Trainees

Six trainees

Major Areas of Interest

The program provides opportunities for education and research in comparative and experimental pathology, immunobiology, microbiology, infectious diseases, and physiology, as well as pathogenesis, control, and treatment of laboratory animal diseases. The Health Sciences Center includes colleges of medicine, veterinary medicine, dentistry, pharmacy, nursing, and health-related professions, so opportunities are available for individual or collaborative research using virtually all species of laboratory animals and domestic livestock.

Index Terms

Experimental pathology, immunology, microbiology.

University of Miami

Principal Investigator
Norman H. Altman, V.M.D.
Professor and Director
Department of Pathology (R-64)
Division of Comparative Pathology
University of Miami School of Medicine
P. O. Box 016960
Miami, FL 33101
305-243-6415 Fax: 305-243-3549
E-mail: naltman@miami.edu

Number of Trainees

Six trainees

Major Areas of Interest

The effects of infectious diseases on the immune system; acute, subacute, and chronic changes with mouse hepatitis virus infection; chronic lactate dehydrogenase virus infection; aspergillosis in birds and improved methods to isolate and characterize immunoglobulins from various species; animal models of cancer, wound healing, zoonotic diseases, and pathogenesis of protozoal diseases; identification and characterization of naturally occurring disease in marine and exotic species as animal models.

Index Terms

Aspergillosis, lactate dehydrogenase virus, marine and exotic species, mouse hepatitis virus, protozoal diseases, wound healing.

The Jackson Laboratory

Principal Investigator
John P. Sundberg, D.V.M., Ph.D.
Senior Staff Scientist, Head of Pathology
The Jackson Laboratory
600 Main Street
Bar Harbor, ME 04609
207-288-6420 Fax: 207-288-6079
E-mail: jps@jax.org or sbs@jax.org
URL: http://www.jax.org

Number of Trainees

Two trainees

Major Areas of Interest

Comparative pathology, molecular biology, and model development using mice, as well as metabolic diseases, cancer, immunology, hematology, and developmental biology.

Index Terms

Animal models, genetic diseases, mice, molecular biology.

Johns Hopkins University

Principal Investigator
M. Christine Zink, D.V.M., Ph.D.
Division of Comparative Medicine
Johns Hopkins University
School of Medicine
720 Rutland Avenue
Baltimore, MD 21205
410-955-9770 Fax: 410-955-9823
E-mail: mczink@welchlink.welch.jhu.edu

Number of Trainees

Eight trainees

Major Areas of Interest

Laboratory animal medicine and comparative pathology, retroviral diseases of animals and humans, comparative neurovirology and neuropathology, fish pathology and carcinogenesis, enteric infections of laboratory animals, interventional radiology, and experimental surgery.

Index Terms

Animal models, neurovirology, pathology, radiology, toxicology.

Harvard Medical School/New England Regional Primate Research Center

Principal Investigator
Andrew A. Lackner, D.V.M., Ph.D.
Associate Professor of Pathology
New England Regional Primate Research Center
Harvard Medical School
One Pine Hill Drive
Southborough, MA 01772-9102
508-624-8018 Fax: 508-624-8181
E-mail: andrew_lackner@hms.harvard.edu

Number of Trainees

Six trainees

Major Areas of Interest

Molecular and comparative pathology, pathogenesis of immunosuppressive retroviruses and associated opportunistic infections, infectious diseases, immunopathology, neurovirology, vascular biology.

Index Terms

AIDS, infectious diseases, macaques, molecular and comparative pathology, retrovirus.

Massachusetts Institute of Technology

Principal Investigator
James G. Fox, D.V.M.
Professor and Director
Division of Comparative Medicine
Massachusetts Institute of Technology
Building 16-825
77 Massachusetts Avenue
Cambridge, MA 02139
617-253-1735 Fax: 617-258-5708
E-mail: jgfox@mit.edu

Number of Trainees

Six postdoctoral trainees
Six summer veterinary students

Major Areas of Interest

Molecular pathogenesis of infectious diseases of laboratory animals with particular emphasis on the gastrointestinal tract, helicobacter and campylobacter infection in humans and animals, development of animal models for biomedical research, biology and medicine of the ferret (*Mustela putorius furo*), zoonotic and infectious diseases, as well as biosafety issues in in vivo models.

Index Terms

Ferret, gastrointestinal tract, helicobacter infection, zoonotic diseases.

University of Michigan

Principal Investigator
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URL: http://www.ulam.umich.edu

Number of Trainees

Six trainees

Major Areas of Interest

Bacterial virulence and mechanisms of disease focusing primarily on cytokines, pneumocystis, cryptosporidiosis, legionella in animal models; bacterial pathogenesis using *Vibrio cholera* as the model system; definition of the spectrum of spontaneous degenerative and neoplastic age-associated lesions in mice and rats; investigation and characterization of spontaneous and iatrogenic diseases of laboratory animals. Also, hypertension, tumor immunology, cardiac physiology, mechanisms of pain, thermoregulation, cardiovascular pharmacology, reproductive endocrinology, diabetes mellitus, and immunoregulation.

Index Terms

Aging, cryptosporidiosis, cytokines, iatrogenic diseases, pneumocystis.

University of Missouri–Columbia

Principal Investigator
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URL: http://www.missouri.edu/~gradron/lamap

Number of Trainees

Five trainees

Major Areas of Interest

Laboratory animal diseases and pathology. Established investigators serve as research mentors in such areas as reproductive physiology, immunology, infectious disease, diagnostic pathology, microbiology, psychology, and animal science.

Index Terms

Diagnostic pathology, immunology, infectious disease, psychology, reproductive physiology.

Cornell University

Principal Investigator
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Associate Dean for Research and Graduate Education
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College of Veterinary Medicine
Cornell University
Ithaca, NY 14853-6401
607-253-3755 Fax: 607-253-3756
E-mail: ddm7@cornell.edu

Number of Trainees

Two trainees in Cellular and Molecular Medicine Program
Four trainees in Comparative Medicine Program

Major Areas of Interest

Reproductive biology, cell biology, receptor-ligand interactions, signal transduction, calcium metabolism, cancer biology, virology, parasitology, immunology, and genetics.

Index Terms

Calcium metabolism, immunology, parasitology, reproductive biology, signal transduction.

Wake Forest University

Principal Investigator
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Winston-Salem, NC 27157-1040
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Number of Trainees

Four trainees

Major Areas of Interest

Atherosclerosis, osteopathology and bone metabolism, diabetes mellitus, neurobiology, psychobiology, behavior, reproductive endocrinology, and cancer biology.

Index Terms

Atherosclerosis, cancer biology, diabetes mellitus, neurobiology, psychobiology.

University of Pennsylvania

Principal Investigator
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Philadelphia, PA 19104-6008
215-898-2324 Fax: 215-573-5952
E-mail: jhwolfe@vet.upenn.edu

Number of Trainees

Four trainees

Major Areas of Interest

Molecular biology, pathology, and treatment of animal models of human genetic diseases, particularly lysosomal storage disorders, immunodeficiencies, hematologic disorders, myopathies, developmental defects, susceptibility to infectious pathogens, and neurodegenerative diseases; mapping, cloning, and characterization of disease-causing genes, cytogenetics, and the molecular and cellular mechanisms of disease; molecular medicine approaches to the treatment of genetic diseases include enzyme therapy, transplantation, and special interest in somatic gene therapy.

Index Terms

Animal models, brain, gene therapy, genetic diseases, heart, hematopoietic system, immunity, molecular biology, skeleton, stem cells.

University of Washington

Principal Investigator
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Number of Trainees

Six trainees

Major Areas of Interest

SAIDS-D immunodeficiency, pathobiology of genetically engineered mice, transgenic mouse models of GI cancer, role of antioxidant enzymes in aging and cancer, gene-targeted mouse models of aging and the immune system, transgenic technology, and embryonic stem cell biology.

Index Terms

Artificial organs, comparative oncology, developmental toxicology, pasteurellosis, teratology, virology.

Kansas State University

Principal Investigator
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Kansas State University
Manhattan, KS 66506
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E-mail: dunn@vet.ksu.edu

Number of Trainees

Eight predoctoral veterinary trainees

Major Areas of Interest

Exploring research as a career option: short-term research training for veterinary students during the summer months in cardiovascular physiology, immunophysiology, molecular genetics, pathophysiology, and neuroscience.

Index Terms

Biotechnology, cardiovascular diseases, genetic diseases, neuroscience, physiology, thrombosis, training, vaccine development, veterinary infectious diseases.

Oklahoma State University

Principal Investigator
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Stillwater, OK 74078
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E-mail: aconfer@okstate.edu
URL: http://www.cvm.okstate.edu

Number of Trainees

Ten predoctoral trainees

Major Areas of Interest

Exploring research as a career option: short-term research training for veterinary students during the summer months in various areas of veterinary medicine including infectious diseases, physiology, molecular biology, and clinical research.

Index Terms

Anesthesiology, bovine respiratory disease, equine medicine, infectious diseases, laser surgery, molecular biology, parasitology, pharmacology, physiology, toxicology.

University of Pennsylvania

Principal Investigator
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3800 Spruce Street
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URL: http://www.vet.upenn.edu

Number of Trainees

Twelve predoctoral veterinary trainees

Major Areas of Interest

Exploring research as a career option: short-term training in the summer months. Exposure to multiple aspects of biomedical research including genetics, reproduction, pathogenesis, neurobiology, cell and molecular biology.

Index Terms

Cell and molecular biology, gene therapy, genetic diseases, immunobiology, neurophysiology, pathogenesis, receptor biology, reproduction.

Washington State University

Principal Investigator
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URL: http://www.vetmed.wsu.edu

Number of Trainees

Eight predoctoral veterinary trainees

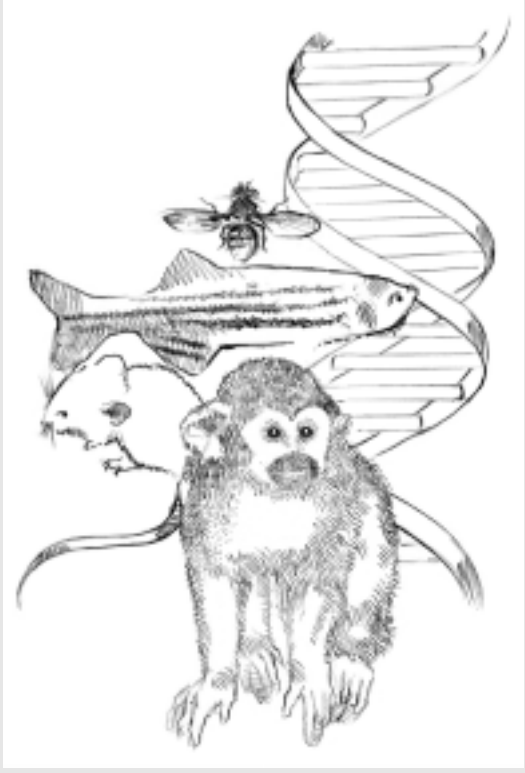
Major Areas of Interest

Exploring research as a career option: short-term training in infectious diseases of animals, neuroscience, biotechnology, emerging diseases, vaccine development, genetic diseases of animals, and cardiovascular diseases.

Index Terms

Biotechnology, cardiovascular diseases, emerging diseases, food safety, genetic diseases, neuroscience, physiology, training, vaccine development, veterinary infectious diseases.

Comparative Medicine Activities



Regional Primate Research Center Grants (P51)

Further information about RPRC grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

Through base grant support, awards for Regional Primate Research Centers (RPRCs) provide specialized research resources for research studies applicable to the solution of human health problems, pilot research projects, and studies on nonhuman primate biology to improve animal health and well-being. These center grants also offer opportunities for research involvement and experience in primatology to graduate students, postdoctoral fellows, visiting scientists, and junior faculty members, as well as short-term learning assignments for students of the health professions. Currently, NCRR supports eight RPRCs located at major U.S. academic medical institutions across the country. Each RPRC, staffed by a core of scientific experts in nonhuman primate research and by technical-support professionals, functions as both a research center and a shared resource that offers the biomedical research community a diverse array of resources and services.

Application

Applicants should submit a completed PHS Form 398 (latest revision), which is available on the NIH Web site at: http://www.nih.gov/grants/forms.htm. For instructions, follow the PHS 398 and additional, specific instructions provided in the *Regional Primate Research Centers: Information for Program Guidelines*. Copies of this document may be obtained from the NCRR Comparative Medicine area. Application deadline is June 1. Potential applicants should contact CM staff prior to the development of an application. NIH policy dictates that applications for greater than $500,000 be returned to the applicant unless the prospective funding institute has agreed to consider supporting the proposal.

Review Criteria

Each RPRC application submitted to the NIH may be evaluated by three groups: first, an optional site visit team composed of members of the Comparative Medicine Review Committee (CMRC) and ad hoc consultants; next, by the CMRC, or Special Emphasis Panel; and finally, by the National Advisory Research Resources Council. Evaluation of a new or competing renewal RPRC application includes: (1) organizational framework; (2) program direction; (3) administrative services; (4) animal services; (5) core science services; (6) physical facility and environment; and (7) science departments/divisions/programs areas that rely on the total infrastructure support and services of the RPRC in order to conduct the research.

Funding

The award of grants is contingent on the receipt of applications of high merit, relevance to the mission of the NCRR Comparative Medicine area, and availability of appropriated funds.

Animal Model and Animal and Biological Materials Resource Grants (P40)

Further information about P40 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

Animal resource grants are used to provide support for special colonies of laboratory animals, including nonhuman primates, as well as other resources such as cultures (cells, tissues, and organs) and genetic stocks that serve the biomedical research community at large. These resource centers must have three basic characteristics. First, the resource must have a research component to generate new information that is relevant to the resource. Second, the resource must serve the needs of investigators in a variety of research areas where work is sponsored by categorical NIH institutes and centers (ICs). If the user community is very narrow or limited to the applicant institution, support for the animal resource should be sought from the appropriate NIH categorical ICs. Third, the resource must be available to investigators on a local, regional, and national basis. An objective of animal resource grants is that the project should progress toward self-sufficiency in a reasonable period of time.

Application

Applications should be submitted on grant application form PHS 398 (latest revision) on any of the following receipt dates: February 1, June 1, or October 1. The PHS 398 form is available on the NIH Web site at: http://www.nih.gov/grants/forms.htm. Prospective applicants are encouraged to discuss their P40 application with NCRR Comparative Medicine staff prior to submission.

Review Criteria

The following review criteria are used to evaluate P40 applications: significance to biomedical research community; approach; innovation; need for the resource; investigator qualifications; research component; and environment.

Funding

The award of grants is contingent on the receipt of applications of high scientific merit, relevance to the mission of the NCRR Comparative Medicine area, and availability of appropriated funds.

Resource-Related Research Project Grants (R24)

Further information about R24 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

Resource-Related Research Project Grants (R24) are investigator-initiated projects that primarily support applied studies to characterize and develop new resources or to improve existing ones. Resources are defined as animal, cell culture, or computer/mathematics models that have the potential for becoming well-used systems for research projects. These grants are intended to support research projects contributing to the knowledge of a model system that will make the model more useful and more accessible to the research community. The models of interest to NCRR are limited to those that span the interests of two or more categorical NIH institutes or centers. The research areas that are appropriate for support with the R24 grant mechanism are identical with those for R01 grants supported by NCRR.

Review Criteria

The following evaluation criteria will be used for resource-related research project grants: significance, approach, innovation, investigator, and environment. In addition, the applicant must demonstrate a need for the resource in the biomedical community.

Application

Applications must be submitted using the PHS 398 application form (latest revision) on any of the following receipt dates, February 1, June 1, and October 1. The PHS 398 form is available on the NIH Web site at: http://www.nih.gov/grants/forms.htm.

Funding

The award of grants is contingent on the receipt of applications of high scientific merit, relevance to the mission of the NCRR Comparative Medicine area, and availability of appropriated funds.

Investigator-Initiated Research Project Grants (R01)

Further information about R01 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The NCRR Comparative Medicine area supports basic research projects related to laboratory animal science and medicine and model systems related to animal research that do not fall within the categorical interest of a single NIH institute or center (IC). Categories and examples of such research include animal models, biotechnology, normative biology, animal disease, and animal welfare. Research projects are limited to those that span the interests of two or more categorical NIH ICs. Such projects should be designed to establish, expand, or improve the usefulness of a particular model system. Grants may be awarded for investigations to demonstrate the value of a certain animal species, stock, or strain as a model for naturally occurring disease processes or other biologic phenomena related to human health. Pilot studies involving the use of a model that has been developed may be supported only to the extent that such studies may be helpful in defining its value as a research model. Support for full-scale research projects that use the model should be sought from appropriate categorical NIH ICs or other resources.

Application

Applications must be submitted using the Public Health Service (PHS) 398 application form (latest revision) on any of the three regular receipt dates, February 1, June 1, or October 1. The PHS 398 is available at the NIH Web site: http://www.nih.gov/grants/forms.htm.

Review Criteria

The following review criteria will be used in the evaluation of research project grants: significance, approach, innovation, investigator, and environment.

Funding

The award of grants is contingent on the receipt of applications of high scientific merit, relevance to the mission of the NCRR Comparative Medicine area, and availability of appropriated funds.

Exploratory/ Developmental Grants (R21)

Further information about R21 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

This mechanism supports innovative, exploratory/developmental research projects to help applicants acquire preliminary data necessary to pursue R01 and R24 applications. Research projects supported by this award should challenge existing paradigms and encompass novel ideas to improve understanding of a biomedical research problem. The applicant has responsibility for developing a sound research plan.

Application

For R21 applications, the NCRR Comparative Medicine area grant program normally accepts applications only in response to announcements that specify this mechanism or after consultation with, and on the agreement of, program staff. Applications should be prepared in accordance with PHS 398 (latest revision) instructions. Page and appendix limitations beyond those stated in the PHS 398 may apply, depending on the specific announcement. The PHS 398 is available on the NIH Web site at: http://www.nih.gov/grants/forms.htm.

Review Criteria

Unless specified otherwise through an announcement, review criteria are the same as those for R01 grants (i.e., significance, approach, innovation, investigator, and environment). However, originality of the approach and potential significance of the proposed research are major considerations in the evaluation. Application deadlines are February 1, June 1, and October 1.

Funding

Support is limited to 2 years, at a maximum level of $100,000 (direct cost) per year. These funds are not to be used to supplement or supplant projects currently supported by Federal or non-Federal funds, or to provide interim support for projects under review. Although these grants are not renewable, they are expected to provide the opportunity to collect sufficient preliminary data to apply for future support from either the NCRR or other NIH institutes and centers.

Small Business Grants (R41, R42, R43, R44)

Further information about small business grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

Both Small Business Innovation Research (SBIR; R43, R44) and Small Business Technology Transfer (STTR; R41, R42) grants are awarded for research in the development of biomedical methods and technology that relate to improvements in laboratory animal care, use, and management. Research and development interests include, but are not limited to: control of laboratory animal disease; improvement of culture, preservation, or management of laboratory animals; and methods for identification or production of new animal models.

Application

The three receipt dates for SBIR applications are April 15, August 15, and December 15. Receipt dates for STTR applications are April 1, August 1, and December 1. Prospective applicants are encouraged to contact CM area staff for advice before submitting SBIR or STTR applications. Detailed descriptions of research interests and necessary special instructions to apply for SBIR or STTR grants are found in the solicitations: Omnibus Solicitation for Small Business Innovation Research Grant Applications and Omnibus Solicitation for Small Business Technology Transfer Grant. These are published each year and can be obtained from the NIH Web site at: http://www.nih. gov/grants/funding/sbir.htm.

Review Criteria

The following review criteria are used to evaluate SBIR and STTR grant applications: soundness and technical merit of the proposed approach (preliminary data are not required for Phase I proposals); qualification of the proposed principal investigator, supporting staff, and consultants; scientific, technical, or technological innovation of the proposed research; potential of the proposed research for commercial application or societal impact; appropriateness of the budget requested; adequacy and suitability of the facilities and research environment; adequacy of assurances detailing the proposed means for (a) safeguarding human or animal subjects and/or (b) protecting against or minimizing any adverse effect on the environment.

Funding

Support under the SBIR program is normally provided for 6 months/$100,000 for Phase I and 2 years/$750,000 for Phase II. For the Small Business Technology Transfer STTR program, support is normally provided for 1 year/$100,000 for Phase I and 2 years/$500,000 for Phase II. However, applicants may propose longer periods of time and greater amounts of funds necessary for completion of the project.

Special Emphasis Research Career Award (K01)

Further information about K01 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The purpose of the Special Emphasis Research Career Award (SERCA) in Pathology and Comparative Medicine is to assist graduate veterinarians with experience in laboratory animal science-related activities to become independent biomedical investigators in research related to comparative medicine. The SERCA award emphasizes in-depth research experience in a variety of basic and clinical scientific disciplines. The overall program should be focused around a central research question; for example, the elucidation of disease mechanisms of induced and spontaneous mutant animals such as mice, rats, or zebrafish and other aquatic species. Examples of research needs and opportunities in this area include animal models, pathology, biotechnology, normative biology, animal disease, and animal welfare. Additional SERCA information is provided on the NCRR Web site at: http://www.ncrr.nih.gov/compmed/serca.htm.

Eligibility

Prospective applicants are encouraged to discuss their potential eligibility for the SERCA program with NCRR Comparative Medicine staff. Candidates for a SERCA in Comparative Medicine must: (1) hold a Doctor of Veterinary Medicine (D.V.M. or V.M.D.) degree (or equivalent) from an institution that is recognized by the American Veterinary Medical Association; (2) have completed their clinical training, including specialty training, in a relevant discipline prior to receiving an award; (3) not have been previously designated as PI on any research project supported by sources from outside their institution; (4) be nominated by an institution on the basis of personal qualifications, interests, accomplishments, motivation, and potential for a research career; (5) receive appropriate mentoring throughout the duration of the program.

Application

A candidate for the SERCA may not concurrently apply for any other NIH award that duplicates the provisions of this award nor have another submitted application pending. SERCA applications may be submitted on any one of the three following receipt dates: February 1, June 1, or October 1. Applications must be submitted on PHS Form 398 (latest revision), including the additional instructions for Research Career Awards. The PHS Form 398 is available on the NIH Web site at http://www.nih.gov/grants/forms.htm.

Funding

The SERCA provides 5 years of support. At the end of 3 years the research proposal, along with overall progress during the initial 3 years of SERCA support, will be peer reviewed and considered by the NCRR Comparative Medicine staff to determine the candidate's eligibility for funding during the fourth and fifth years.

Midcareer Investigator Awards in Mouse Pathobiology Research (K26)

Further information about K26 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The purpose of the Midcareer Investigator Award in Mouse Pathobiology Research is to provide support for established pathobiologists to allow them protected time to devote to mouse pathobiology research and to act as mentors for beginning investigators. The target candidates are outstanding scientists engaged in pathobiology research who are within 15 years of their specialty training, who can demonstrate the need for a period of intensive research focus as a means of enhancing their research careers, and who are committed to mentoring the next generation of mouse pathobiologists. The objectives of the Midcareer Investigator Award in Mouse Pathobiology Research are to: encourage midcareer pathobiologists to devote more time to mouse pathobiology research and mentoring beginning investigators; and increase the pool of mouse pathologists who can conduct mouse pathology studies. More information can be obtained from the Midcareer Investigator Award in Mouse Pathobiology Research program announcement at http://www.nih.gov/grants/guide/pa-files/PAR-99-065.html.

Eligibility

Most candidates for this award will have a D.V.M. degree (or equivalent) from an accredited institution. Candidates must have completed their specialty or research training within 15 years of submitting the application. Candidates must be working in a research environment, conducting mouse pathobiology research and have significant peer reviewed research support. Candidates must be willing to spend up to 50 percent effort (at least 25 percent) conducting mouse pathobiology research and mentoring. Candidates must describe a research and mentoring program that will meet their individual needs and capabilities. A candidate for this award may not concurrently apply for any other PHS award that duplicates the provisions of this award. Recipients of this award are required to hold independent research support, either Federal or private, during the period of this award.

Application

All candidates are encouraged to contact the NCRR Comparative Medicine area prior to submission. Applications are to be submitted on the grant application form PHS 398 (latest revision), using the instructions in Section IV as appropriate, and will be accepted on or before the following receipt dates: February 1, June 1, or October 1. Forms are available on the NIH Web site at http://www.nih.gov/grants/forms.htm.

Funding

NIH will provide salary and commensurate fringe benefits for the award recipient for up to 50 percent effort, up to the level of the NIH extramural salary cap (in FY 1999, $125,900 per annum, or a maximum of $62,950 for 50 percent effort). NCRR will provide generally up to $25,000 per year for research expenses, relevant travel, and statistical services. Funding decisions are based on recommendations of the initial and secondary review, need for research personnel in specific program areas, and the availability of funds. The NIH policy on submission of revised (amended) applications limits the number of such applications to two.

National Research Service Act Postdoctoral Fellowships (F32)

Further information about NRSA grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 FAX: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The purpose of the National Research Service Act (NRSA) is to help ensure that highly trained scientists will be available in adequate numbers and in appropriate research areas to carry out the Nation's biomedical and behavioral research agenda. The NCRR Comparative Medicine area awards NRSA individual postdoctoral fellowships (F32) to the most promising applicants to support full-time research training related to the NCRR mission. NCRR awards some NRSA predoctoral (F31) awards, but most support is for the postdoctoral fellowships. Therefore, only the postdoctoral fellowship (F32) is described here.

Eligibility

Applicants must be citizen or noncitizen nationals of the United States at the time of application or must have been lawfully admitted to the United States for permanent residence. Prior to an F32 award, applicants must have also received a D.V.M., V.M.D., or equivalent, from an accredited domestic or foreign institution or hold a Ph.D. or equivalent degree. Training fellowships may be requested for periods of 1, 2, or 3 years. Applicants must arrange for an appointment to a host institution and be accepted by a sponsor who is qualified to supervise the training and research experience.

Application

The Application for Public Health Service Individual National Research Service Award (PHS-416-1) should be used. A statement concerning F32 applications is available on the NIH Web site at http://www.nih.gov/grants/guide/pa-files/PA-99-025.html. The three receipt dates for F32 applications are April 5, August 5, and December 5. Applicants are encouraged to call the NCRR Comparative Medicine area prior to applying.

Funding

Individual postdoctoral fellows generally may not receive more than 3 years of NRSA support, including any combination of support from institutional and individual NRSA awards. Fellowship awards include a stipend, the level of which is based on the experience of the fellow, and an allowance to the sponsoring institution.

National Research Service Act Institutional Training Grants (T32)

Further information about T32 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The purpose of the NRSA Institutional Training Grant (T32) program offered by the NCRR Comparative Medicine area is to provide support for training highly qualified veterinarians for research careers in biomedical areas related to comparative medicine and/or comparative pathology. This training may be incorporated into the requirements for a research degree program. The research accomplished under this training program should result in first author publications in peer-reviewed scientific journals and should provide the trainee with the necessary tools to successfully compete for independent grant funding.

Eligibility

Special justification must be provided for support of candidates who have completed their Ph.D. training prior to, in conjunction with, or after receiving their veterinary medical degree. An important requirement of institutional training programs sponsored by NCRR's Comparative Medicine area is that all applicants must have completed their veterinary medical training and at least 1 year of training in a clinical discipline or comparative medicine and/or comparative pathology prior to their acceptance as a research trainee. This prior training must be funded by other sources and must include relevant experience concerning intercurrent diseases of laboratory animals, disease treatment and control measures, diagnostic pathology, and surgery. In addition, trainees should have a working knowledge of all laws, regulations, and policies related to the care and use of laboratory animals. The institutional training environment must include a high-quality core of academic scientists in the area(s) of comparative medicine and/or comparative pathology. For additional information, read the guidelines and provisions for NRSA Institutional Research Training (postdoctoral trainees), as outlined in the *NIH Guide*, Volume 26, Number 16, May 16, 1997.

Application

Applicants must use the grant application form PHS 398, which is available on the NIH Web site at http://www.nih.gov/grants/forms.htm. It contains special instructions for T32 awards. Application deadlines are January 10, May 10, and September 10.

Funding

Funding is based on scientific and educational merit, availability of funds, and research program priorities.

National Research Service Act Professional Student Short-Term Research Training Grants (T35)

Further information about T35 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The NCRR Comparative Medicine area awards NRSA Short-Term Training: Students in Health Professional Schools (STSHPS) institutional grants to biomedical research institutions to further research manpower development objectives in laboratory animal science, laboratory animal medicine, comparative medicine, and comparative pathology.

Eligibility

Applicant institutions must meet the basic eligibility criteria outlined for T32 applications. Institutions must have the staff and facilities required for the proposed program and have responsibility for the selection and appointment of trainees. Trainees should have successfully completed at least one semester of professional course work. Awards cannot be used to support course work that is required for professional degrees. Because STSHPS grants are intended to introduce students to research in cases where they might not otherwise have an opportunity to gain such experience, students who are in combined D.V.M., V.M.D./Ph.D. programs are not eligible for this support.

Application

The application should describe a plan for widely advertising the program and for the recruitment of minorities that are currently underrepresented nationally in the biomedical and behavioral sciences. Applicants are further expected to employ approaches that will nurture a sense among trainees of belonging to a community of scientists. All training activities must be on a full-time basis during a training sequence. Applications for this award should be made on Form PHS 398, available on the NIH Web site at http://www.nih.gov/grants/forms.htm. The trans-NIH guidelines for STSHPS are found in the *NIH Guide* of February 6, 1998. Only one application may be submitted for the single receipt date of January 10 each year, and institutions can have only one active STSHPS award at any time.

Funding

The STSHPS grant provides support for a minimum of 4, and a maximum of 32 trainees per budget period for periods of 2 to 3 months. Awards may be requested for up to 5 years and are renewable. The objective is to attract highly qualified veterinary students for biomedical and biobehavioral research careers.

Academic Research Enhancement Awards (R15)

Further information about R15 grants and detailed application instructions may be obtained from:

Comparative Medicine Area
National Center for Research Resources
6705 Rockledge Drive, Rm. 6030
Bethesda, MD 20892-7965
301-435-0744 Fax: 301-480-3819
E-mail: cmadir@ncrr.nih.gov

Purpose

The NCRR Comparative Medicine (CM) area participates in the Academic Research Enhancement Award (AREA) program. The purpose of this program is to stimulate research in educational institutions that provide baccalaureate training for a significant number of the Nation's research scientists, but that have not been major recipients of NIH support. AREA funds are intended to support new or ongoing health-related research projects by faculty members in eligible institutions. The CM area is interested in research in laboratory animal sciences, including the etiology, pathogenesis, and control of laboratory animal diseases, as well as the environmental requirements of laboratory animals. The CM area is also interested in the development of biomedical research methods employing nonmammalian organisms, tissues or cell culture, and mathematical or computer modeling.

Eligibility

All health professional schools, colleges, and other academic components of domestic institutions that offer baccalaureate or advanced degrees in the health-related sciences are eligible. However, those institutions that have received research grants and/or cooperative agreements from the NIH totaling more than $2 million per year (in both direct and indirect costs) in each of 4 or more of the last 7 years may not apply. To determine the eligibility of a school or component with regard to this requirement, applicants should consult the list of ineligible schools/components on the AREA Web page at http://www.nih.gov/grants/funding/area.htm. If the name of the school does not appear on the list, it may be eligible to apply for AREA grants.

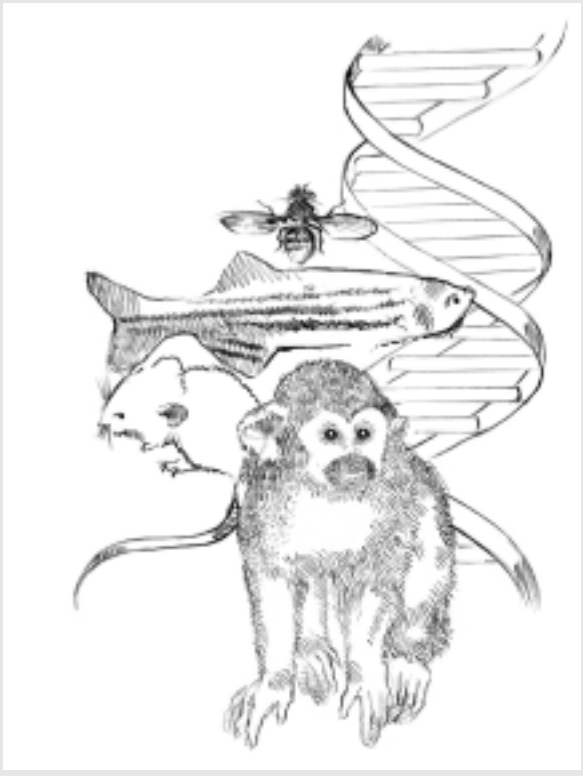
Application

Use the PHS 398 (latest revision) to apply for an AREA grant. The form is available on the NIH Web site at http://www.nih.gov/grants/forms.htm. Because AREA grants are one of the mechanisms included in NIH's Modular Grants initiative, applicants must observe the supplemental instructions for modular grant applications contained in the Notice published in the *NIH Guide for Grants and Contracts* on December 18, 1998.

Funding

AREA grants are awarded on a competitive basis. Funding decisions on individual applications will be based on scientific merit, relevance to NIH programs, and on the applicant institution's contribution to the undergraduate preparation of doctoral-level health professionals.

Indexes



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U.S. Department of Health and Human Services
National Institutes of Health
National Center for Research Resources

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